AN EDGELL PUBLICATION

$2.50/JANUARY 1990

LANDSCAPE MANAGEMENT

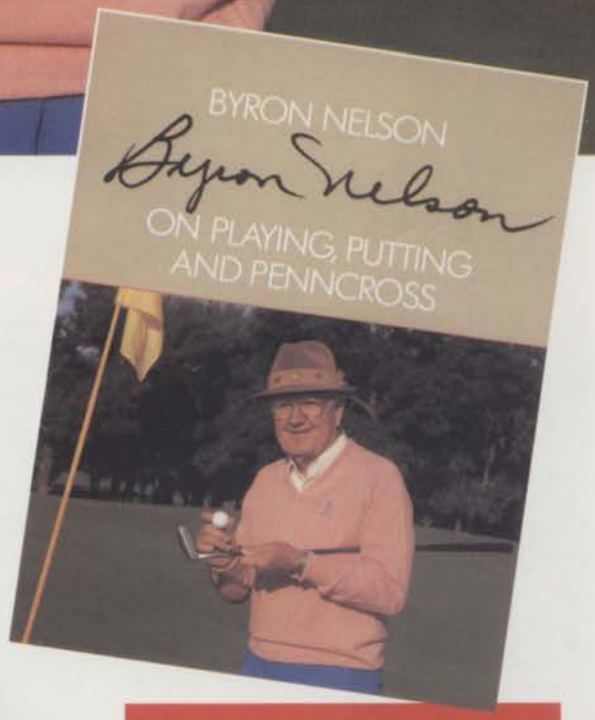
SERVING GOL[illegible]SCAPE PROFESSIONALS

SPOTLIGHT ON GOLF

Pebble Beach

Tough roughs

PENNCROSS
Creeping Bentgrass



Byron Nelson and Penncross go back a ways. You'll want to read what Byron has to say about Playing, Putting and Penncross.

Call or write today for this complimentary collection of Byron's thoughts on golf and his recollections of Penncross creeping bentgrass, the standard for putting greens since 1955.

Circle No. 157 on Reader Inquiry Card

Tee-2-Green Corp.
PO Box 250
Hubbard, OR 97032
1-503-981-9574
FAX 503-981-5626
1-800-547-0255

JANUARY 1990, VOLUME 29, NUMBER 1

LANDSCAPE MANAGEMENT

34 COVER: SPOTLIGHT ON GOLF.
In this issue we highlight golf course management, starting with Terry McIver's profile of D.J. Pakkala's role at the world-famous Peddle Beach courses. Managing roughs, calibrating sprayers and hydroseeding are also featured.

40 TOUGH ROUGHS
Does your golf course look a little rough around the edges? There's a way to polish that look, as proven by courses in Pittsburgh and Cleveland.

46 WHO CALIBRATES YOUR SPRAYERS?
by David Varner, Ph.D., and Robert Grisso, Ph.D. University of Nebraska researchers found that only one of six golf courses are accurately applying pesticides. What would they find at your course?

54 A COMPATIBLE PRACTICE
by Robert Stinson. Hydroseeding is becoming more and more popular with superintendents because it offers even, precise seed delivery and fast green-up.

60 BY THE LIGHT
by Jerry Roche. Landscapers on the cutting edge of the industry are beginning to offer nightlighting installation as a viable add-on service. Golf course superintendents are also taking advantage of the trend toward 24-hour beauty.

68 MATCHING BIDS WITH JOB COSTS
by Dick Landis. Northwest Landscape Industries has found that the best route to the land of high profits is through efficient estimating and job costing.

80 FIGURING THE COST OF FERTILIZER
by Steve Cockerham. Simple mathematics can tell if you're wasting money by applying additional fertilizer.

86 USING DIRECT MAIL AS A MARKETING TOOL
by Ed Wandtke. A direct mailer may be one of the best marketing tools available to attract new customers in the landscape market.

DEPARTMENTS

4 As I See It . . .
8 Green Industry News
12 Short Cuts
18 Athletic Turf
22 People
28 Letters
32 Events
74 Project Profile
88 Article Index
92 Research Update
94 Products
110 Classified
114 Ad Index
116 Problem Management

LM Editorial Staff

Jerry Roche
Exec. Editor

Will Perry
Mg. Editor

Terry McIver
Assoc. Editor

LM Editorial Advisory Board

Doug Chapman
Horticulturist
Dow Gardens
Midland, MI

J.R. Hall
Extension Agronomist
VPI & SU
Blacksburg, VA

Kent Kurtz
Professor
Horticulture
Cal Poly-Pomona

Harry Niemczyk
Professor
Ohio State University
Wooster, OH

A. Marty Petrovic
Assoc. Professor
Cornell University
Ithaca, NY

LANDSCAPE MANAGEMENT (ISSN 0894-1254) is published monthly by Edgell Communications, Inc. Corporate and Editorial offices: 7500 Old Oak Boulevard, Cleveland, Ohio 44130. Advertising Offices: 7500 Old Oak Boulevard, Cleveland, Ohio 44130, 111 East Wacker Drive, Chicago, Illinois 60601 and 3475 Lenox Road, N.E., Suite 665, Atlanta, Georgia 30326. Accounting, Advertising Production and Circulation offices: 1 East First Street, Duluth, Minnesota 55802. Subscription rates: $25 per year in the United States: $50 per year in Canada. All other countries: $100 per year. Single copies (pre-paid only): $2.50 in the U.S.; $5.00 in Canada; elsewhere $10.00; add $3.50 per order for shipping and handling. Back issues, if available, $10; add $3.50 per order for shipping and handling (pre-paid orders only). Office of publication: Edgell Communications, Inc., 1 East First Street, Duluth, Minnesota 55802. Second class postage paid at Duluth, Minnesota 55806 and additional mailing offices. Copyright© 1989 by Edgell Communications, Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher.

POSTMASTER: Send address changes to LANDSCAPE MANAGEMENT, P.O. Box 6198, Duluth, Minnesota 55806.

BPA ABP EDGELL COMMUNICATIONS

The better you are at controlling w

Strange, isn't it, that the better you are at something, the more difficult the hurdles become. Take grass and weed control in landscapes. The instant you lay waste to troublemakers such as crabgrass and pigweed, you've really created a monster.

Because a pristine landscape is where the dreaded yellow nutsedge grows best.

There's no competition to thwart its tenacious encroachment. And those underground nutlets of the weed act like bomb shelters against most postemergence and preemergence herbicides.

eeds, the more you need Pennant.

Pennant® herbicide is the exception. This preemergence herbicide controls annual grasses and weeds –including crabgrass and pigweed– for months. But, most importantly, it also prevents any outbreak of yellow nutsedge.

All without stunting the ornamental plants that it's designed to protect.

So don't create bigger problems by using a lesser herbicide.

Use Pennant. And protect yourself against your own success.

© 1990 CIBA-GEIGY Corporation, Turf and Ornamental Products, Box 18300, Greensboro, NC 27419. Always read and follow label directions.

Circle No. 104 on Reader Inquiry Card

AS I SEE IT...

Is it time to weed out drug users?

As we embark upon the 1990s, the green industry can feel confident of having made its voice known in the battle for fair pesticide application laws. Though regulatory problems continue, this start of a new decade could be the perfect time to take an industry-wide, active stance against drug abuse.

"One company can make a difference; many companies can have a major impact," says Jerry C. Moland of TurfScape Landscape Care, Chandler, Ariz.

Moland speaks from experience, having last summer begun a substance abuse program that includes the following policies:

- Prospective employees are required to submit to drug tests.
- Continuing employees are subject to random drug testing.
- A drug treatment program is available for interested employees.
- "Casual users" are no longer tolerated.

"Everybody in the industry is scared to death of losing people," Moland notes. "They're not sure how to deal with what could be a massive turnover. There were times I wavered, too."

Though eight good employees—one out of three—were initially lost, TurfScape's workforce has since grown from 24 to 30. And Moland is ecstatic with worker performance.

"All new employees possess better skill levels and more experience, and perform much higher quality work," he notes. "All are at TurfScape because of their desire to work in a drug-free environment."

There are other positive results of the company's new anti-drug policy: greatly reduced turnover, no accidents, no in-house thefts, no excessive damage to equipment, lower tardiness and absenteeism, good public relations.

And—oh yes—"the highest possible morale anyone in our industry could expect."

Moland sees this policy as a small though not insignificant step that could eventually help rid the country of its drug problems. "All small businesses working together can make a far bigger difference," he observes. "If users can't find work, they can't buy drugs. If the customers dwindle, watch the dealers go away."

TurfScape's credo, not surprisingly, is "TurfScape Truly Cares."

Do you?

Jerry Roche

Jerry Roche, executive editor

LM

EDITORIAL STAFF

Jerry Roche, Executive Editor
Will Perry, Managing Editor
Terry McIver, Associate Editor
Office: 7500 Old Oak Blvd.
Cleveland, OH 44130
(216) 243-8100
FAX (216) 826-2832

MARKETING STAFF

Dick Gore, Publisher
Office: 3475 Lenox Rd. N.E.
Suite 665
Atlanta, GA 30326
(404) 233-1817
FAX (404) 261-7022

Jon Miducki, National Sales Manager
Marsha Dover, Midwest Sales Manager
Barbara Thomas, Eastern Sales Manager
Bob Earley, Group Vice President
Office: 7500 Old Oak Blvd.
Cleveland, OH 44130
(216) 243-8100
FAX (216) 826-2832

Robert Mierow, W. Coast Representative
Office: 1515 NW 51st Street
Seattle, WA 98107
(206) 783-0549
FAX (206) 784-5545

Tom Greney, Senior Vice-President
Office: 111 East Wacker Drive
Chicago, IL 60601
(312) 938-2317
FAX (312) 938-4850

SUPPORT STAFF

Carol Peterson, Production Mgr.
Connie Freeland, Prod. Supervisor
Lynn Williams, Graphic Design
Jackie Eisenmann, Circulation Super.
Bonnie DeFoe, Directory Coordinator
Gail Parenteau, Reader Service Mgr.
Office: 120 West Second St.
Duluth, MN 55802
(218) 723-9200
FAX (218) 723-9223

David Komitau, Graphics Coordinator
Ted Matthews, Promotion Director
Office: 7500 Old Oak Blvd.
Cleveland, OH 44130
(216) 243-8100

EDGELL COMMUNICATIONS

Robert L. Edgell, Chairman; Richard Moeller, President; Lars Fladmark, Executive Vice President; Arland Hirman, Vice President/Treasurer; Thomas Greney, Senior Vice President; Ezra Pincus, Senior Vice President; Joe Bilderbach, Vice President; James Gherna, Vice President; George Glenn, Vice President; Harry Ramaley, Vice President.

A BLEND OF FOUR PREMIUM PERENNIAL RYEGRASSES FROM TURF-SEED, INC.
FOR WINTER OVERSEEDING, LAWN RENOVATION, ATHLETIC FIELDS AND PARKS.

Alliance BLEND

Dark Green, Drought Tolerant, Insect and Disease Resistant Turf...Naturally!

Citation II

- Contains a high level of endophyte that enhances insect resistance.
- Very good resistance to leaf spot, brown patch, crown and stem rust, tolerance to red thread.
- Rich dark green color with good mowing quality.
- Excellent heat and wear tolerance.

Saturn

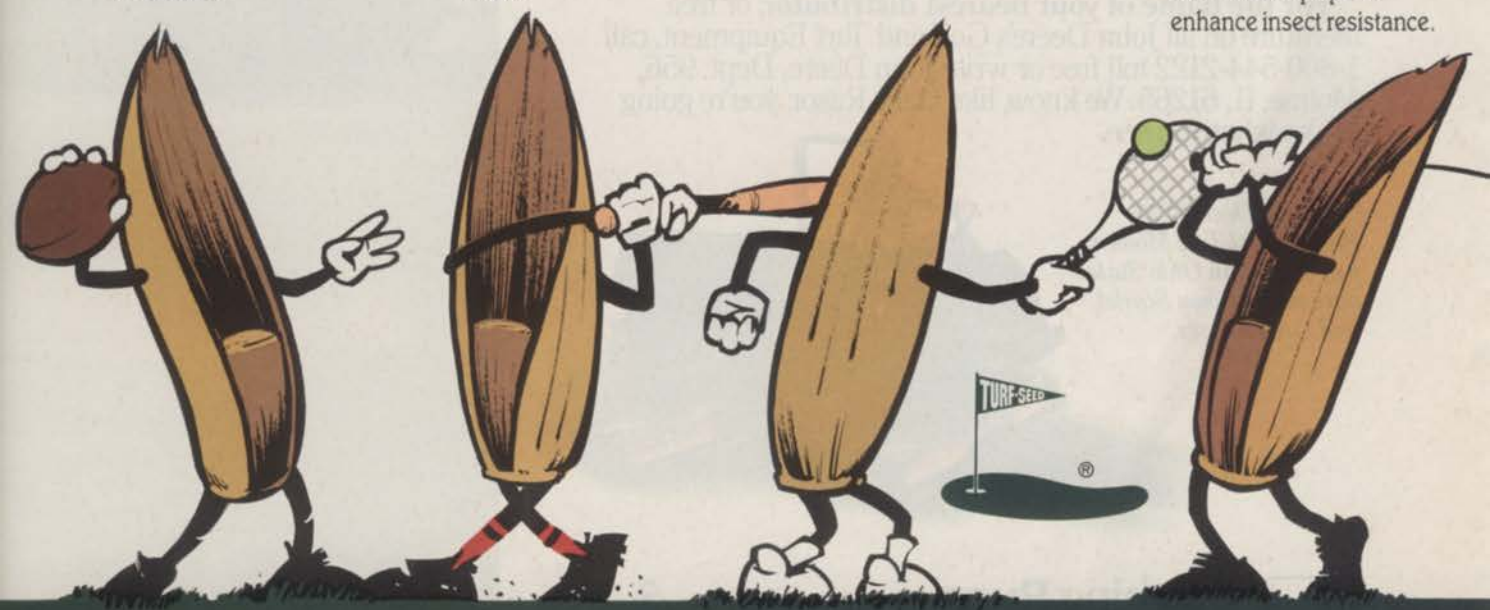
- The number 1 variety in the 1986 National perennial ryegrass trial.
- Dark blue-green colored low growing variety.
- Improved heat tolerance, and resistance to leaf spot, brown patch and stem rust.
- Very good performance in California overseeding trials.

Charger

- Improved resistance to leaf spot, brown patch, stem and crown rust. Tolerance to red thread.
- Good performance under low fertility and improved color and growth under cool weather conditions.
- Early maturity and tested as 2HH.

246 Sunrye

- Very dark blue-green colored turf-type variety.
- Dwarfer growth habit than other varieties in overseeding trials in Palm Springs area.
- Improved resistance to leaf spot, brown patch, and stem rust.
- Contains a moderately high level of endophyte to enhance insect resistance.



Turf-Seed, Inc. PO Box 250 Hubbard, OR 97032 503-981-9571 FAX 503-981-5626 1-800-247-6910

Circle No. 214 on Reader Inquiry Card

Chalk up two more All-Americans for Ohio State

Golf traditions run deep at The Ohio State University. Its two 18-hole courses were designed by famous golf course architect Alister MacKenzie in the 1920s. Since then, they've challenged All-Americans like Jack Nicklaus and Tom Weiskopf, and today are recognized as two of the premier collegiate tracts in the country.

Gary Rasor is responsible for maintaining these courses. A job he's done with pride since graduating from Ohio State over 20 years ago. Last year, Rasor's equipment line got a big boost with the addition of another American standout—a John Deere 3325 Professional Turf Mower.

"We wanted a high-quality, high-volume mower that could collect clippings," says Rasor. "We bought our first 3325 after seeing it here on demo and have been so impressed with its performance that we've gotten a second one since.

"The full-sized center grass catcher has been a real advantage because we have to mow 36 holes, and not having to stop as often to empty that center basket saves us a lot of time.

"The weight transfer feature has also been important. There are three or four holes on each course where we couldn't mow without it. It really makes a difference on hills."

For the name of your nearest distributor, or free literature on all John Deere's Golf and Turf Equipment, call 1-800-544-2122 toll free or write John Deere, Dept. 956, Moline, IL 61265. We know, like Gary Rasor, you're going to like what you see.

Two John Deere 3325 Professional Turf Mowers help maintain Ohio State's nationally-known Scarlet and Gray courses.

JOHN DEERE

Nothing Runs Like a Deere®

SAFETY live with it

Circle No. 108 on Reader Inquiry Card

GREEN INDUSTRY NEWS

JANUARY 1990, VOLUME 29, NUMBER 1

LANDSCAPE MANAGEMENT

CONVENTIONS

GCSAA honors Bengeyfield and Watschke at its show

ORLANDO GCSAA '90

ORLANDO, Fla. — USGA Green Section national director William Bengeyfield and Dr. Tom Watschke, Penn State University turfgrass researcher and educator, have won the GCSAA's 1990 Distinguished Service Awards.

The awards will be presented at the opening session of the 61st annual International Golf Course Conference and Show here next month.

Under Bengeyfield's leadership, the USGA/-GCSAA Turfgrass Research Committee has seen more than $2.8 million raised and distributed for research to develop turfgrass cultivars that will reduce water usage and maintenance costs. A long-time GCSAA member, Bengeyfield also operates Frankfort Golf Course in Frankfort, Mich. He served as editor of *Green Section Record* for 20 years.

Watschke is coordinator for Penn State's Landscape Management and Water Quality Research Center, synchronizing all field research for the five departments that cooperatively use the facility. His research has led to the use of growth regulators for *Poa annua* control, the development of new post-emergence crabgrass control compounds, advancement in broadleaf weed controls and, most recently, toward a better understanding of surface runoff on turfgrass.

Spotlight on...

The conference itself will explore the environmental impact of golf courses. It will feature seminars, speakers and forums for the more than 15,000 expected superintendents to enhance their understanding of environmental management.

Some of the environmental topics to be discussed are: water quality and conservation; integrated pest management; hazard communication; underground petroleum tanks; and the storage, disposal and recycling of chemicals. Expert presentations on these and other topics will be made during the Friday session on "Managing Today's Environment."

A special government relations forum will also be held at the conference. Attended by GCSAA members, federal regulatory officials and leading scientific researchers, the forum will detail ways to monitor regulation and inform and educate government personnel on the day-to-day management practices at golf courses.

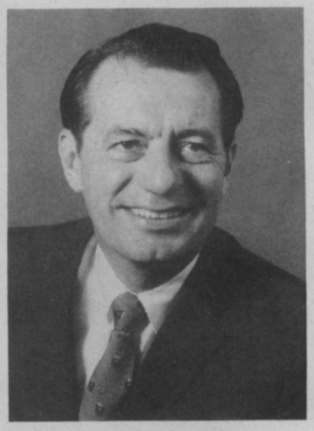
Officer election

The GCSAA will also elect officers and directors at the show. Gerald L. Faubel has been nominated for the presidency in 1990-1991. He is superintendent at Saginaw Country Club, Saginaw, Mich. He currently serves as the organization's vice president.

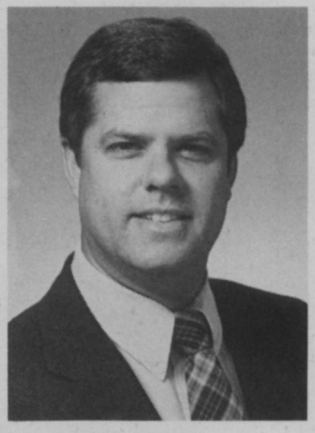
Vice presidential candidates are Stephen G. Cadenelli of the Meteconk National Golf Club in Jackson, N.J., and William R. Roberts of the Lochmoor Club in Grosse Pointe Woods, Mich.

Three candidates for director will be elected for two-year terms. Nominees are Joseph G. Baidy of Acacia Country Club in Lyndhurst, Ohio; Charles A. Clark of Broadmoor Golf Course in Colorado Springs, Col.; Cecil C. Johnston of Avila Golf and Country Club Hyannisport, Mass.; and Randall P. Zidik of Rolling Hills Country Club in McMurray, Pa.

For more information on attending the event, contact the GCSAA at (913) 841-2240. □



William Bengyfield



Dr. Tom Watschke

ASSOCIATIONS

ALCA picks Dennis from its own staff

FALLS CHURCH, Va. — Debra Dennis has been promoted to executive director of the Associated Landscape Contractors of America (ALCA). She was chosen by a thorough and highly competitive process, according to ALCA president Ron Kujawa.

"We narrowed the final list to four outstanding candidates," notes Kujawa. "Debra Dennis went into the race as a darkhorse at best, but she just stood out. She emerged as very strong, energetic and competitive, and was a strong unanimous choice."

Interviews with the four finalists were conducted by a seven-person search committee at the Green Team Conference in St. Louis. Each interview lasted no less than two hours.

"Most organizations would take an easy way out. We didn't," says Kujawa. "The membership expended a great deal of time and personal effort on behalf of the organization."

During her 10 years with ALCA, Dennis has served in a variety of positions, most recently as staff liaison to six association committees.

The new executive director is a 1979 graduate of the University of Georgia. One of her first goals will be to build on ALCA programs and services for the membership, ultimately leading to an improved image for landscape contractors.

"If we strive to improve the image, it can only help bring more people into the profession," the new director believes.

Dennis: Improve image

Dennis's selection as successor to Terry Peters will signal new directions for the organization. "We're doing some re-organization and we've got some exciting plans," Kujawa says. "Our key people have agreed to stay. They and our state association councils are very excited." □

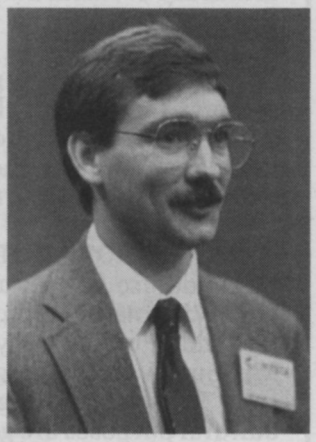
REGULATIONS

On local compliance: going that extra yard

ROCHESTER, N.Y. — Pesticide regulations will continue to be a problem for professional landscapers. They'll have a better go of it if they understand and comply with that legislation, become more politically involved, support product research and follow integrated pest management (IPM) practices.

That's the advice of James Wilmott, extension agent for New York's Monroe County, speaking at the recent New York State Turfgrass Association meeting here.

"There are more situations occuring," says Wilmott, "in which landscape managers have been told by administrators to stop using pesticides entirely. In less extreme cases, people have been told they can use pesticides only when they are needed."



Wilmott: Diplomacy works

To best understand state and local laws, Wilmott suggests meetings with local enforcement officials as the best way to establish both a personal and professional relationship.

"This shows you have a willingness to comply," says Wilmott. "And, the officer is probably going to take it much more lightly if you have some small violation of regulations. It's good to establish that relationship."

Wilmott believes political involvement has kept the legislators at bay to a great degree. "Imagine," he says, "where we'd be now if it weren't for groups like the Green Council, NYSTA, or the GCSAA." Lack of industry defense strategies would have left companies open to the hurricane-like force of unbridled legislation.

Wilmott says Integrated Pest Management (IPM) practices "are being en-

continued on page 12

LANDSCAPING

'No wildflowers,' neighbors tell Cleveland man

SHAKER HTS., Ohio — A dispute began in this affluent Cleveland suburb recently over a man's decision to turn his front yard into a wildflower lawn.

Joseph Gyurgyik, owner of Shaker Landscaping, seeded his 12,500 sq. ft. yard in the spring with cosmos, poppies, black-eyed Susans and about 75 other species, both annual and perennial. Some of his neighbors are now complaining that the yard is an eyesore, will draw rodents and spread to other yards via airborne seeds.

In response to complaints, city officials are moving to more clearly define a zoning law that calls for "appropriate" landscaping. However, as of November 18, they were unable to devise an appropriate ruling, simply because many groomed yards contain at least a few of the unwanted plantings.

Councilman David Goss and other officials say Gyurgyik's yard is not appropriate, but they're not sure why.

"You know this yard is bad when you see it, but the question is where to draw the line," says Mayor Stephen Alfred.

"I don't think they're going to be able to come to a compromise," predicts Gyurgyik. "They might outlaw the flowers I have in my front yard, but then half of Shaker Heights (homeowners) will be in violation."

Gyurgyik says he has received compliments about his yard from some neighbors who think it is something new and different. The local paper also ran a few letters from persons who see nothing wrong with Gyurgyik's plant selection.

Gyurgyik says he will appeal any zoning order not in his favor. □

IPM *from page 11*
couraged more often in school districts and other properties around New York State. Keep your superiors informed, maximize pest-tolerant landscape design and encourage plant health through use of IPM procedures.

"There is no question," he says, "that regulation of pesticides will be the dominant feature in your neighborhoods. IPM is the answer to the problem." □

The Scandinavians began their tour at Jacobsen headquarters in Racine, Wisc. and at the University of Minnesota.

GOLF

Scandinavian supers visit U.S. courses

RACINE, Wisc. — More than 90 golf course superintendents from Europe's Scandinavian countries recently toured the United States, thanks to the European distributor for U.S. equipment manufacturer Jacobsen Division of Textron.

After a stop at Jacobsen and the University of Minnesota, the group then flew to Miami and Orlando, Fla. During that portion of the trip, the supers played golf at Doral Country Club's Gold Course and the new course at Grand Cypress.

During their trip, the superintendents also got a close-up look at maintenance techniques used by their North American counterparts.

"The purpose of this trip was to educate the Scandinavians on what's being done in the United States," says Neils-Erik Brems, who distributes Jacobsen products in Denmark. "They can then go back and educate their boards of directors or greens committees on what can be done to improve their courses."

Sweden alone has an estimated 200,000 golfers, Brems says. And the number of courses in Denmark is expected to jump from 60 to 100 by the year 2000. □

Low-Cost FUERST F-L-E-X-I-B-L-E TINE HARROW®

Keeps Turf in top condition!

The proven low cost way to keep golf courses, athletic fields, ball diamonds, and all turf areas in top condition. Crumbles and scatters cores without clogging, brings up thatch, prepares seedbed without disrupting existing growth. Aerates to stimulate growth, scarifies to improve moisture penetration. No maintenance. Maintains cinder tracks. 4 to 42 ft. widths. Adjustable penetration. No maintenance. *Satisfaction guaranteed.*

For FREE literature, testimonials, prices, phone toll-free 1-800/435-9630.

FUERST BROTHERS, INC.

P.O. Box 427-LM1, Gibson City, IL 60936 (In IL call 217/784-4266)

Circle No. 119 on Reader Inquiry Card

SHORT CUTS

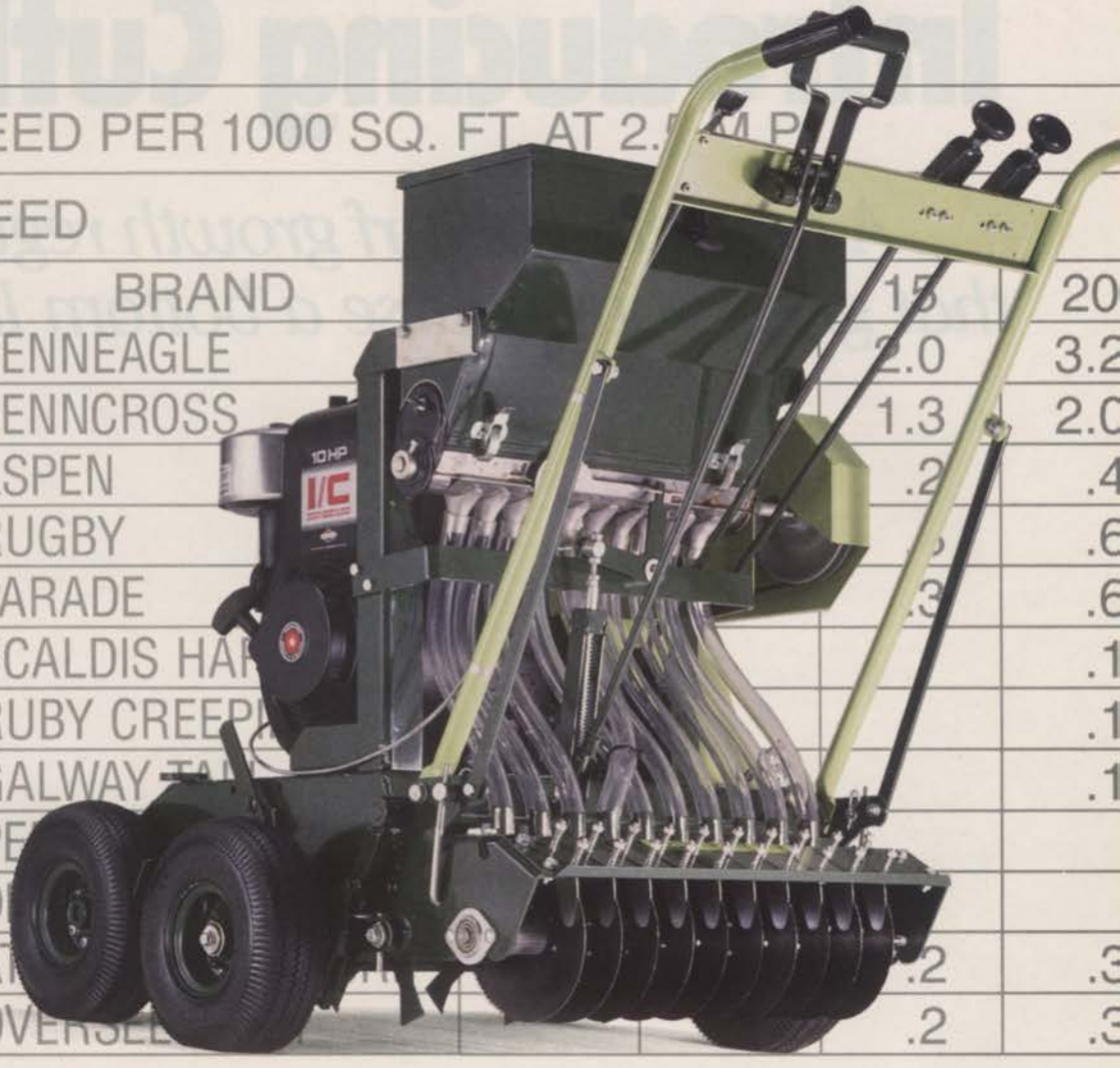
ALL-PRO SOD... Evergreen Sod Farm in Peotone, Ill. has two All-Pros on its side, according to one of its print advertisements: Boss 111 bluegrass sod blend and Chicago Bears all-pro strong safety **Dave Duerson**. Evergreen vice president **Dean Hupe** met Duerson's agent on a plane trip, says Evergreen office and sales manager **Linda LeSage**. Hupe offered Duerson free sod for his new home north of Chicago in return for his cooperation with the ad. "Dave is a super person, very down to earth," relates LeSage, who with her son has visited Duerson's home a few times. Evergreen grows sod for Wrigley Field, Comiskey Park and Milwaukee County Stadium. The company is also growing sod for the Chicago White Sox' new stadium.

MULTI-LINGUAL... Dr. **Alex Shigo** is enjoying international success with his tree books, he tells LANDSCAPE MANAGEMENT. His "New Tree Health," a 12-page booklet with 13 full-color drawings, is now available in English, Dutch, French, Italian and Spanish. Those ($3 each), plus his new 192-page book "Tree Pruning, a Worldwide Photo Guide" ($39), are available from Shigo & Trees Associates, 4 Denbow Rd., Durham, NH 03824. Shigo says his next project is a 12-page folding booklet called "Caring for Young Trees From Nurseries to Landscapes."

LYME DISEASE LINGERS... The reality of continued Lyme disease problems remains, notes **Walter Shroeder** of the New York State Pesticide Applicators Association. "I would advise that everyone develop a strategy of dealing with it," writes Shroeder. "There has been a multitude of incidents where the Lyme disease tick was transported into the city by child, adult or pet, after a jaunt in the woods." Shroeder believes virtually all rodents can serve as the host for the bacteria, not just the deer mouse. "In California, it was found that lizards can serve as a host for the spirochete for a disease similar to Lyme disease."

HITTING ROCK BOTTOM... Public regard for pesticide use has hit an all-time low, said Dr. **Jim Wilkinson,** executive director of the Pesticide Public Policy Foundation at a recent Missouri Valley Turfgrass Association meeting. "Those of us using pesticides for non-agricultural purposes are going to face even greater challenges down the road. Environmental groups know they can use the pesticide issue to their financial advantage." Wilkinson sees stormy weather ahead as the EPA finishes its national survey of pesticide residues in well water, expands endangered species and wildlife protection regulation, and as landfills near capacity.

The art of application for maximum germination.



POUNDS OF SEED PER 1000 SQ. FT. AT 2.[illegible] M P[illegible]						
	SEED					
TYPE	BRAND				15	20
BENTGRASS	PENNEAGLE				2.0	3.2
	PENNCROSS				1.3	2.0
KENTUCKY BLUEGRASS	ASPEN				.2	.4
	RUGBY					.6
	PARADE				.3	.6
FESCUE	SCALDIS HA[illegible]					.1
	RUBY CREEP[illegible]					.1
	GALWAY TA[illegible]					.1
RYEGRASS PERENNIAL	PE[illegible]					
	D[illegible]					
MIXTURE	A[illegible]				.2	.3
	OVERSEE[illegible]				.2	.3

The Ryan® Mataway® Overseeder is simply better.

Better results begin with the basics, like seed calibration. An easy-to-read chart on the Mataway Overseeder tells you the exact setting for pounds of seed needed per 1,000 sq. ft. Just look it up, load it up, select setting, and you're ready to go.

Two-inch spacing between rows gives you a dense pattern for one-pass application. Gandy® precision metering and an easily removed disc-type seed delivery system places the seed directly into the slits for uniform seed/soil contact allowing maximum germination.

The result is a lusher, thicker lawn.

The Ryan Mataway Overseeder gives you the flexibility to power rake, overseed, or to do both at the same time. Call today or contact your nearest Ryan dealer for more information and a free test drive demonstration.

Call toll free 1-800-228-4444 for all the details.

RYAN®

BUILT TO LAST

9034 Cushman, P.O. Box 82409, Lincoln, NE 68501

© Outboard Marine Corporation, 1987. All rights reserved.

Circle No. 105 on Reader Inquiry Card

Introducing Cutless.®

A new kind of turf growth regulator that gives your course a bottom line boost:

More playability.

This is where perfect lies start on your fairway. New Cutless 50W from Elanco.

Unlike other turf growth regulators, new Cutless doesn't stop the development of warm and cool season turfgrass. Instead, it reduces or slows your turfgrass's growth rate by shortening the internodes of the growth stem with no adverse effects on their roots. The result is improved turf quality and more playable fairways.

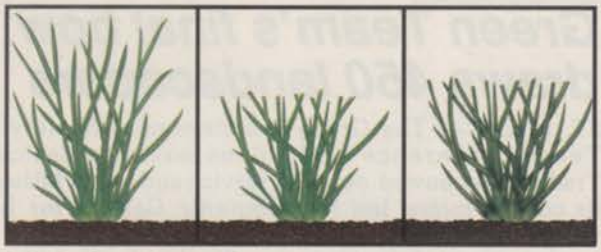
With Cutless, your turfgrass appears thicker and stronger for a denser, more consistent playing surface. Golf balls just naturally sit up better.

Cutless also reduces your water use, resulting in less turf wilt. And lower irrigation costs.

But Cutless does more than that. Much more. It also gives your turf a rich, darker green color.

Because Cutless-treated grass grows at a slower rate, there's also a dramatic reduction in clippings. Up to 50% less. With less mowing frequency. Also up to 50% less. You not only save time and labor costs, you can also manage your hard-to-mow areas more efficiently.

Here's another added benefit with Cutless. As your turfgrass grows up thicker and more competitive, there's less room for troublesome weeds to interfere. Cutless also helps crowd out *Poa annua* for conversion to a more desirable turfgrass such as bentgrass.



1. Sprig of grass in normal state.
2. Seven to 10 days after Cutless application, mowed sprig sometimes exhibits slight discoloration of treated area and leaf tip browning.
3. Growth reduction peaks between third and eighth weeks, accompanied by darker green coloration and increased tillering.

Don't just take our word for Cutless. Take it from Scott Niven:

Scott Niven
Superintendent, Stanwich Club
Greenwich, Conn.

"I've reduced clippings 30 to 50% when we mow fairways. My guys don't have to empty the baskets as much, so we save time and money on labor. But I think the best advantage is the reduction in the amount of water you have using Cutless. It's a marked difference.

"Initially, you get so little discoloration with Cutless that a golfer would never notice it. But after 4 weeks, the difference was between night and day on how dark green the Cutless turf was.

"Cutless helped us convert from 80% Poa annua *to over 95% bentgrass within five years. But I'm just as impressed with how Cutless creates a much thicker turf. It makes the grass as tough as nails, helps the ball sit up higher for our golfers."*

Find out more about giving your course more playability with Cutless. See your Elanco distributor. Or for a free brochure, call toll-free: **1-800-352-6776.**

Elanco Products Company
A Division of Eli Lilly
and Company
Dept. EM-455, Indianapolis, IN 46285 U.S.A.
Cutless®—(flurprimidol, Elanco)

Circle No. 110 on Reader Inquiry Card

CONFERENCES

Green Team's final bow draws 450 landscapers

ST. LOUIS — The Green Team Conference and Trade Show bowed out of its current format last November by attracting 450 landscape and grounds managers.

Starting this year, the Green Team event joins the Professional Lawn Care Association of America's show to become the Green Industry Expo.

Highlights were the annual "Breakfast of Champions" and well-attended addresses by Dr. Dayna Waitley, Dr. Alex Shigo and Frank Ross.

The Associated Landscape Contractors of America presented Environmental Improvement Awards, and more than 70 companies participated in the trade show.

Two special President's Awards were presented by the Professional Grounds Management Society: to Anne Seaman for dedicated service and to the Missouri Botanic Garden for horticultural excellence.

The Landscape Manager of the Year award, co-sponsored by the PGMS and LANDSCAPE MANAGEMENT magazine, was given to Morris L. Martin, vice president of the Landscape Division at the Alfred L. Simpson Co., Atlanta, Ga.

Elected as PGMS officers were: president Ted Shull of Kettering (Ohio) Medical Center; first vice president Tom Smith of Spring Grove Cemetery, Cincinnati; second vice president John Abernethy Jr. of Lenoir (N.C.) cemeteries, and treasurer John Michalko of Case Western Reserve University, Cleveland.

Directors elected were Doyle Watson of Belle Meade Country Club, Nashville, Tenn.; Larry Ward of the Medical College of Georgia, Augusta and Paul Thomas of Towson (Md.) State University. □

Deere champions

Golf course superintendent Toby Strahan was on the winning team from the Country Club of Louisiana at John Deere's team golf championship held at PGA West, Palm Springs, late last year. Members of the winning team were (from left) Deere distributor Howard Ruiz of Sunshine Equipment, Strahan, club president Ben Skillman, club manager Luis Romero and PGA pro Dean Alexander. Each amateur won a championship ring and $100 gift certificate.

PRODUCTS

Green industry gets insecticide

MIDLAND, Mich. — Pageant DF, the green industry's first dry flowable insecticide, has received EPA approval. It is available for sale next month, according to sources at DowElanco here.

"Pageant DF is a unique broad-spectrum tree and shrub insecticide differentiated by its excellent activity on worms, scale and aphids," says marketing manager Rob Peterson.

Pageant DF was specifically formulated for the tree and shrub care market. It combines water-dispersable granule technology with convenient, disposable packaging. This formulation offers improved handling benefits: less dust, less residue in the container, excellent pourability, easy measuring, less applicator exposure and minimal agitation.

"It has all the features

needed for the '90s," Peterson says. □

Corrections

Two errors appeared in October's "Pocket Guide to Landscape Management" in the cool-season weed control section.

On page 11, Dow's Turflon (triclopyr) is mis-labelled Garlon. On page 9, methyl bromide is branded Dowfume, which is no longer available to the landscape market. In addition, Tordon (picloram) should not be included, but Confront (clopyralid/triclopyr) and Acclaim (fenxaprop-ethyl) should be.

LANDSCAPE MANAGEMENT apologizes for any inconvenience these inadvertent errors caused.

Finally, our October article on Minute Grass listed only an address in France. Cancel your passport applications—we now have the address of the U.S. supplier of the pre-grown grass: 11685 Ventura Boulevard, Studio City, CA 91604; (818) 766-2661 or (213) 877-0864. □

LANDSCAPING

Michigan giants merge companies

PONTIAC, Mich. — Reinhold Landscape and Vidosh Inc. have merged to become Reinhold & Vidosh, Michigan's largest professional landscape service and supplier.

"Reinhold Landscape has always been committed to improving," says Melanie Reinhold Sawka, president of Reinhold & Vidosh. "We believe our merger will strengthen our services while maintaining the same standards of excellence that have distinguished our company for over half a century."

Sawka

Vidosh

Operations will expand to regional office locations in Michigan, Tennessee and Florida. The new company will retain all current levels of staff and managerial positions.

"That we are our own primary source of landscape materials, equipment and management guarantees our ability to operate on an unprecedented national level," says chairman Donn Vidosh. □

Kentucky Bluegrass up in 7 days.

Introducing PRIMESTAN . . . exclusive from Stanford Seed. Plant on a Monday and see the green in one week or less.

See dramatically improved germination that delivers thicker, lusher, greener lawns *FAST!* PRIMESTAN is the state-of-the-art osmoconditioning process which brings seed to an animated state . . . waiting for water, warmth and oxygen. PRIMESTAN is *not* a seed coating process and is unlike other processes you may have heard about.

The seed chosen for PRIMESTAN must be among the very best available. Stanford Seed has chosen the bold, dark, and hardy semi-dwarf variety, Gnome Kentucky Bluegrass to introduce PRIMESTAN . . . available straight or in three specially formulated mixtures—Premium, Sunny and Shady.

PRIMESTAN Gnome . . . Kentucky Bluegrass up in 7 days. Prove it yourself. Write us for your PRIMESTAN Data Pack. PRIMESTAN Gnome now available. See your Stanford Seed representative or turf supplier.

Consumer Products Division,
Stanford Seed Company,
R.R. #1, Box 405,
Muddy Creek Road,
Denver, PA 17517

©Stanford Seed, 1989

Circle No. 291 on Reader Inquiry Card

ONE BAG. TWO JOBS. THREE CHEERS!

Country Club 19-4-6 with BETASAN®

Fertilize putting greens, fairways and general turf areas—while you control crabgrass and poa annua—with County Club 19-4-6 with Betasan. This superior homogeneous fertilizer with 3 units of WIN and 3.6% Betasan herbicide does two jobs in one operation for maximum efficiency! And for straight pre-emergence control, try Lebanon Betasan 7G or Lebanon Betasan 4E. From the source for premium quality turf products—your local Lebanon distributor.

Lebanon
TOTAL TURF CARE
A division of Lebanon Chemical Corporation

BETASAN® is the Registered Trademark of ICI Americas, Inc.

Circle No. 129 on Reader Inquiry Card

Are you professional?

We all talk about being professionals. **Don Marshall**, director of golf and stadium operations for the city of Anaheim, Calif., wonders how often professionalism is truly practiced in the athletic turf and golf industries.

Speaking at the New York State Turfgrass Association exposition in Rochester, N.Y., Marshall fired a few well-aimed salvos at what he thinks is a lack of true professionalism in the green industry.

According to Marshall, this deficit is caused by a number of trends:

- Product endorsements;
- So-called "consultants" who accept payment for imparting the most basic turf knowledge; and
- The bias that Marshall believes exists toward veteran turf professionals who have never received GCSAA certification or similar scholastic honors.

Don Marshall

"My generation," explains Marshall, "has nothing upon which to hang our careers other than hard work applied to the best of our ability in a professional manner.

"Being high profile or putting out a great public relations spin will not create the professional," says Marshall. "Such may serve to hide a few inept ones for a while but it is not a solution to an image problem. In many ways it accentuates it."

Marshall admits that sports turf management is far from being an exact science. But regardless of all the degrees or permits a person might have, "you use your own knowledge base to make the best possible judgement, including asking for qualified help when you're indecisive. If you expand this knowledge base and exercise an honest work ethic, I say you make it as a professional."

Payment for consultation is wrong, asserts Marshall, "when the knowledge (the consultant is) imparting is so basic, it is in the public domain," and "when (the consultant is) using (his or her) position for personal gain rather than that of the employer."

"How many times have you run into a situation in which a consultant comes in and lists six pieces of equipment that are needed? *Now* it becomes important, and suddenly the equipment appears. But the poor super operating the place has asked for it for years," Marshall observes.

"There will always be a few of us who—by virtue of our coincidental successes and personalities—will become a head above of the rest in the public eye," concludes Marshall. "They shall be recognized as outstanding in their fields. The rest of us will be happiest by merely standing out in our fields."

If you're looking for a rider that performs like a Bunton walker, the search is over.

Over thirty years ago Bunton set the standard for commercial mowing with the introduction of an "out-front" mowing deck. Since then, others have copied the concept on riding mowers, but only now, after years of development and testing, has the concept been applied to a Bunton quality mower.

The 61" Bunton rider is built for longevity, performance and efficiency. The result is a rider that has the features and rugged construction you expect from Bunton. If you've been waiting for a rider that performs like a Bunton walker, call us for the name of a Bunton dealer near you.

BUNTON

To maximize life and minimize maintenance, the Bunton 61" cutter deck and power unit are built with reinforced heavy-duty, 10 gauge steel. The positive chain steering system and electric cutter deck lift eliminate the maintenance costs and problems of cables and hydraulic systems.

The superior Peerless transaxle has five forward ground speeds and reverse, with a unique shift linkage that automatically declutches the transmission to "shift-on-the-go" without causing wear to the shift keys and gears.

Operator efficiency is improved with the unique instrument console providing "finger-tip" control of blade engagement, ground speed and engine speed. A shift quadrant assures that the transmission is in the selected gear. A simple toggle switch raises and lowers the cutting deck from the operator's seat for clearing curbs and easy maintenance.

The American made 18 hp Onan engine option makes the perfect combination for long life and reliable performance. It has fully pressurized lubrication and made in America serviceability.

The Bunton details make the difference.

BUNTON

BUNTON CO.

P.O. Box 33247
Louisville, KY 40232
Phone: 502-966-0550
Fax: 502-966-0564

Circle No. 103 on Reader Inquiry Card

For a varie

QUALITY PICKSEED® TURFGRASS PRODUCTS

Fiesta II
Perennial Ryegrass

This advance generation turf-type perennial ryegrass is setting new standards for quality, color, and performance. Its dark green color, fine leaf texture, and environmental tolerance gives you beautiful and functional results, while its high seed count stretches your grass seed dollar. Use Fiesta II straight or in Futura 2000 where it is blended with Blazer II and Dasher II perennial ryegrasses. A genetically superior combination for perennial turf in the North and overseeding in the South.

Banff
Kentucky Bluegrass

Banff is a vigorous dwarf variety that was discovered on the Banff Springs Golf Course in Alberta, Canada. There, Banff survived twenty years of continual heavy watering, repeated attacks from snow mold, and close mowing on a putting green. Just imagine what it could do for you. Banff establishes quickly and forms a disease resistant, cold tolerant, dark green turf.

Touchdown
KENTUCKY BLUEGRASS

Since Touchdown's discovery by the late Tom Rewinsky on the National Golf Links of America on Long Island, this elite bluegrass has become the top choice of sod producers. Its aggressive growth habit and rapid establishment crowds out weeds and Poa annua while developing an even, dark green turf.

MUSTANG
TURF-TYPE TALL FESCUE

Mustang is the tall fescue that looks like bluegrass. Its finer texture, darker green color, and wear and drought tolerance have made it the choice for sports field, sod, park, and home lawn use. Mustang is available straight or in TEAM – a three-way turf-type tall fescue blend that also contains Maverick II and Thoroughbred.

Colt
POA TRIVIALIS

Colt is an Oregon produced variety that offers you domestic seed production benefits. It combines superior turf performance and turf quality with genetic adaptation to North American growing conditions. It is dark green, shade tolerant, disease resistant, and very winter hardy. Colt is a vigorous, low-growing variety that has excellent overseeding qualities.

VICTORY
CHEWINGS FESCUE

For the fourth consecutive year Victory was the highest rated commercially available chewings fescue in the national Fine Fescue Trials. Victory is a low growing, shade tolerant variety that has possibly the darkest green color of any other chewings fescue. It exhibits superior uniformity and disease resistance, too. If you like picking winners, pick Victory.

ty of reasons.

CROSSFIRE
TURF-TYPE TALL FESCUE

Crossfire turf-type tall fescue is the only strategy you need for battling a summer ambush of heat and drought. Crossfire is a lower and slower growing variety of tall fescue that exhibits a very dark green color. It combines improved heat and drought tolerance with outstanding turf quality to produce a dense and durable turf. Crossfire's high marks in overall performance during its initial evaluation proved it was ready for the field. Let Crossfire show you how to endure a long summer siege.

SPARTAN
HARD FESCUE

Spartan is a robust, advanced generation of hard fescue that is dark green, leafy, and persistant. It demonstrates excellent cold tolerance and creates attractive, low growing, low maintenance turf. Spartan mixes well with perennial ryegrass, Kentucky bluegrass, and other fine fescues. It is an outstanding component in many shady and low maintenance mixes suited for use on home lawns, parks, and golf course roughs.

AMERICA
KENTUCKY BLUEGRASS

America is a low maintenance Kentucky bluegrass that has a dense dwarf growth habit, dark green color, excellent disease resistance, and good shade tolerance. Perfect in mixes, America is ideal for golf course fairways, sod production, playing fields, and home lawns.

Pickseed also produces the following quality turfgrass varieties: Agram chewings fescue, Jasper creeping red fescue, Jazz perennial ryegrass, Alpine Kentucky bluegrass, Exeter colonial bentgrass, and National creeping bentgrass.

SHORTSTOP
TURF-TYPE TALL FESCUE

Shortstop is the little guy with big benefits. As its name implies, Shortstop is a slower and shorter growing variety of turf-type tall fescue. But don't let its stature fool you. Shortstop is plenty tough. It has heat and cold tolerance, disease resistance and is widely adapted. Shortstop forms a beautiful, dense, uniform turf of finer, darker green leaves.

BRONCO
Kentucky Bluegrass

Bronco is a very wide bladed Kentucky bluegrass that was developed specifically as a mix companion for turf-type tall fescue. While its texture and color gives it the appearance of a tall fescue, the comparison between the two ends there. Bronco is elite Kentucky bluegrass all the way. Its been bred to be less dense so it won't crowd out tall fescue and yet still aggressive enough to fill in and repair damaged areas quickly. That's what makes Bronco ideal for sports turf use.

Pickseed products are distributed throughout North America by quality seed suppliers.

PICKSEED®
PICKSEED WEST Inc.
P.O. Box 888 • Tangent, Oregon 97389
(503) 926-8886

Circle No. 143 on Reader Inquiry Card

Believing in his own people

MURRYSVILLE, Pa. — Irrigation expert Tamas (Tom) Tanto thinks that having the right people in the right place at the right time is vital.

"We feel it is very important to take our own employees to out-of-town jobs, and not hire local people there," he explains. "We might have one inexperienced person in an eight-man crew, but he's from our home base and we're training him. Most of our crews have been together for a long time. They work long hours—seven days a week to meet the deadlines—and they do quality work."

Some irrigation organizations send out two or three experienced people, and then hire locally to fill out the crew. But often they find it difficult to get on-site help of any kind. And they face the problem, right after payday and as a project winds down, that some local help will not show up.

Tamas "Tom" Tanto (right) confers with David Alexandrowicz, superintendent at St. Clair C.C. in Venitia, Pa.

Tanto's company installs irrigation systems for Arnold Palmer, Jack Nicklaus, Reese Jones, Robert Trent Jones and other top golf course designers. It also re-does irrigation on top-notch, well-known existing courses.

Tanto's 67 employees restrict themselves to an area extending from Maine to Florida, and from the Atlantic Ocean to Ohio. They work hard to keep on top of 20 to 25 concurrent projects.

Tanto, a 1956 Hungarian refugee who earned a civil engineering degree from the University of Pittsburgh, built complete golf courses until 1974. Then the energy crisis convinced him he should concentrate on irrigation, the least energy-dependent and his favorite phase.

How does he keep up with the fast pace he's set for himself?

"It takes a combination of things," he says. "Good people, good equipment, a commitment to finishing jobs right and on time...it's a matter of putting several pieces of a puzzle together."

Tanto has found it im-

to page 26

RIDE A WALKER

Discover Fast, Competitive, Profitable Mowing

Most commercial mowing operations are using walk-behind mowers because they have concluded no rider mower is compact or maneuverable enough to mow landscaped areas. Now maintenance operators all across the country are discovering the compact, maneuverable *Mid-Size Walker Mower* fits their job and saves labor (usually cuts labor 1/2). The labor saving *Walker* looks good whether your business is trying to produce profit or is operating on a budget. Write or call for a free brochure. Ask for a demonstration.

Walker Manufacturing Company, 1839 East Harmony Road, Ft. Collins, CO 80525 • 1-800-777-0356

Circle No. 163 on Reader Inquiry Card

Mitsubishi Mighty Mits. Mighty Tough.

Introducing the Mighty Mits. Rugged, dependable multi-purpose vehicles that cover a variety of your general work needs.

They're efficient. Quiet. And loaded with features:

- A low-maintenance, 3-cylinder water-cooled engine with balance shaft for reduced vibration and noise.
- A payload capacity of up to 1750 pounds.
- Quick and precise rack and pinion steering.
- A compact 12½' turning radius—for easy maneuverability.
- A raised cab roof with generous headroom for increased roominess and comfort.

Choose from Flo-Thru, Full-Door and Tilt Bed models. With 2- and 4-wheel drive options.

The Mighty Mits. They're high. They're mighty. And best of all, they're Mitsubishi.

MITSUBISHI
MOTOR SALES OF AMERICA, Inc.

Industrial Vehicle Division,
6400 W. Katella Ave., Cypress, CA 90630-0064
(714) 372-6000 (800) FON-MITS

Circle No. 135 on Reader Inquiry Card

If you run into a turf-management problem, keep running.

But for virtually every other turf-management problem you face, you can count on a quality Chipco® product to deliver the proven performance you demand.

Take our premium fungicides, for example. Chipco® brand 26019 fungicide provides unsurpassed control of all major turf diseases. And its long-lasting protection makes it the perfect foundation for a season-long disease control program.

For Pythium control, you can't beat Chipco® Aliette® brand fungicide. Its powerful systemic action protects turfgrasses for up to 21 days.

Grubs, mole crickets and surface-feeding insects a problem? Depend on the powerful twosome of Chipco® Mocap® 5G and Chipco® Sevimol.® Chipco® Mocap® 5G pesticide delivers effective, fast, dependable control of grubs, mole crickets—all species—and a wide variety of surface-feeding pests.

Chipco® Sevimol® is a special liquid formulation of Sevin® brand carbaryl insecticide for broad spectrum defense against grubs, sod webworms, chinch bugs, bluegrass billbugs, mole crickets and more than two dozen other turf pests. Chipco®

CHIPCO, RONSTAR, ALIETTE, MOCAP, SEVIMOL, SEVIN and WEEDONE are registered trademarks of Rhone-Poulenc. © 1990 Rhone-Poulenc Ag Company

problem Chipco® products can't solve,

Sevimol® can be used to protect your trees and ornamental plantings, as well.

Chipco® Ronstar® brand herbicide tackles more than 20 of the toughest broadleaf and grassy weeds—including goosegrass and crabgrass—for up to 120 days from a single pre-emergence application.

And Chipco® Weedone® brand DPC herbicide gives you unmatched post-emergence control of more than 65 annual broadleaf weeds.

So, for the turf-management problem Chipco® products can't solve, keep a pair of sneakers handy. For all the others, turn to the first name in quality turf care: Chipco®.

Chipco®

RHÔNE-POULENC

Circle No. 147 on Reader Inquiry Card

As with any crop protection chemical, always read and follow instructions on the label.

CRABGRASS: YOUR DAYS ARE NUMBERED!

Country Club 19-4-6 with TEAM™

Promote turf growth and color this spring—while controlling crabgrass, poa annua and goosegrass with Country Club 19-4-6 with 1.15% Team. Formulated with 28% organic nitrogen, this homogeneous product provides a superior feeding and better particle distribution for outstanding weed control. All in one time-saving application! From the source for premium quality turf products—your local Lebanon distributor.

Lebanon
TOTAL TURF CARE
A division of Lebanon Chemical Corporation

800-233-0628

TEAM™ is the Registered Trademark for Elanco Products Company's combination of benefin and trifluralin.

Circle No. 166 on Reader Inquiry Card

PEOPLE *from page 22*

portant to use reliable trenching and vibatory plowing equipment, which can be maintained by distributors wherever he goes. After trying a bit of everything, he has settled on Ditch Witch: six 30 hp trenchers and one 65 hp trencher, along with five 35 hp lawn plows and various attachments, including two earth saws.

"We expect to get 2,000 feet a day out of each machine and crew," says Tanto. "Usually, we run only one machine at a time on a job. Trenching is normally finished by noon, and the whole day is spent laying pipe."

Tanto also recently acquired a Ditch Witch P40 rod pusher, specifically for a course whose manager would not allow him to saw across roads and cart paths. It's "smaller and lighter than any rod pushers we've used before," he says.

Tanto himself visits all job sites frequently, discussing needs with course officials and making sure their schedules are being met. His "normal" 18-hole irrigation job on a new course takes about 60 days.

What about the future? The demand for new golf courses is increasing almost exponentially, and competent irrigation companies are getting busier. What once was a seasonal activity has become a fast-paced, year-round, high-tech activity for dedicated people like Tanto and his crews.

Paul Thomas (left) and Joe Ardolino were responsible for renovating the baseball field at Towson State University.

Towson's renovation: using all the resources

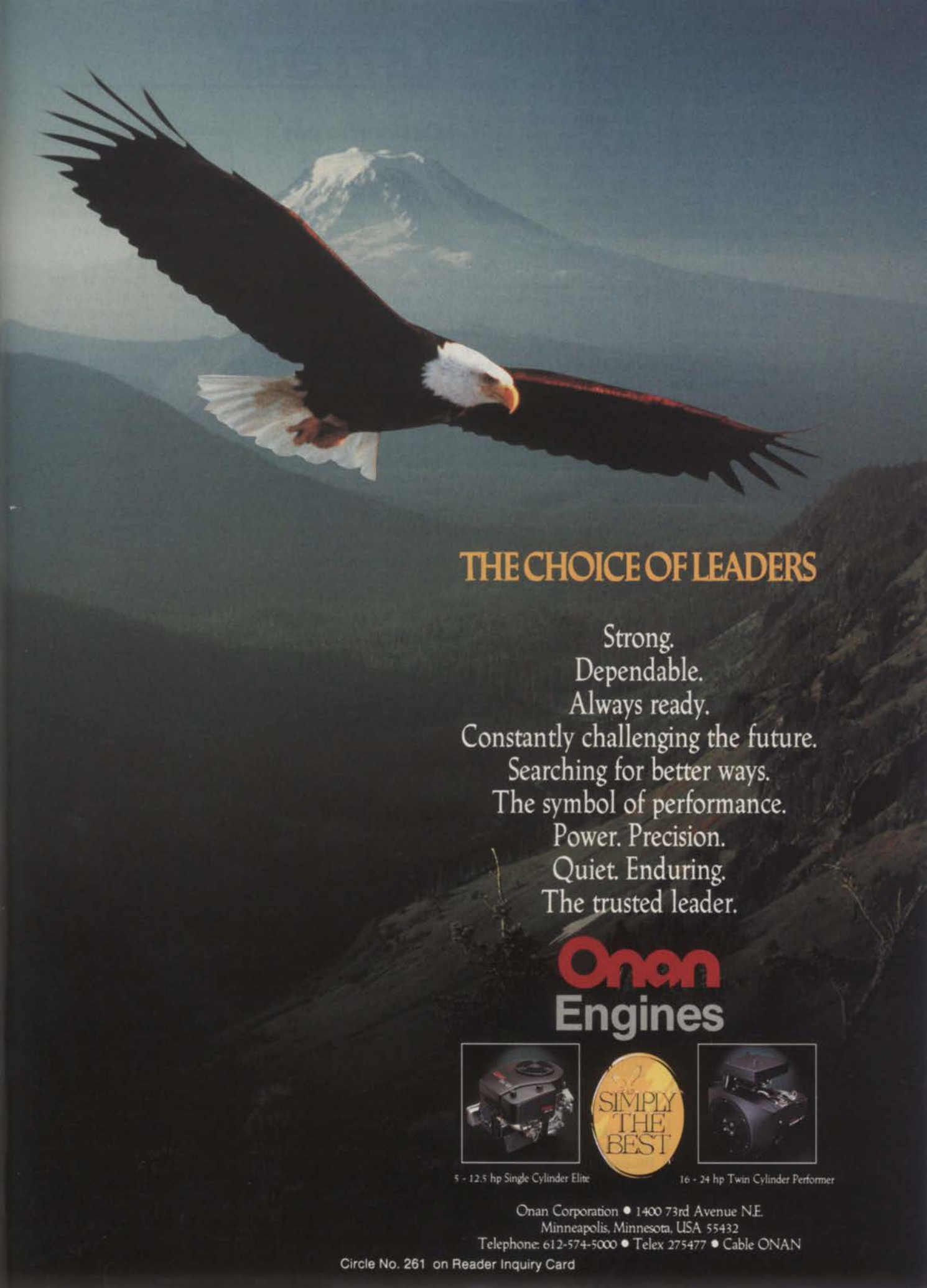
BALTIMORE — When East Coast Conference officials decided that Towson State's baseball team couldn't play on its home field if it qualified for postseason play, Paul Thomas and Joe Ardolino knew it was time to renovate.

Thomas is grounds supervisor and Ardolino assistant athletic director at this small suburban college. Together they transformed the school's baseball stadium from censureship to championship quality, as evidenced by the Beam Clay College Diamond Award won last year.

"The most important step you can take is also the least expensive step," notes Thomas. "And that is to have a conduit between you and the coaches." Thomas notes that there is no shortage of egos to be found on any coaching staff, which underscores the need to have a strong communicator in close contact with coaches.

"We tried very hard to establish positive dialogue with athletic administrators to get a total picture of their needs instead of working on a game-by-game or as-needed basis," says Thomas.

Finding the money for


THE CHOICE OF LEADERS
Strong.
Dependable.
Always ready.
Constantly challenging the future.
Searching for better ways.
The symbol of performance.
Power. Precision.
Quiet. Enduring.
The trusted leader.
Onan
Engines
SIMPLY THE BEST
5 - 12.5 hp Single Cylinder Elite
16 - 24 hp Twin Cylinder Performer
Onan Corporation • 1400 73rd Avenue N.E.
Minneapolis, Minnesota, USA 55432
Telephone: 612-574-5000 • Telex 275477 • Cable ONAN
Circle No. 261 on Reader Inquiry Card

Finding the money for renovation is as difficult as removing 20 years of poor maintenance, Thomas added. The key is to put all the resources at your disposal to work, says Thomas.

"Convince your athletic department to do for you what it does for its sports programs," says Ardolino. Towson State coaches and ballplayers helped lay sod and the local utility company supplied about $10,000 worth of trenching and plumbing work. "That's a real important part of our project. We knew we couldn't do it as a one- or two-man show. You need support."

Thomas also suggested to think big when making plans. Tell coaches and administrators of the field's potential and be a good salesman. "Don't walk in and hit them with the price right away," says Thomas. "I think it's better to go in one day and say, 'These are the improvements we want to make.' Give them the improvements and come back later and tell them how much it will cost."

Ardolino and Thomas say their successful renovation has had a carry-over effect on the rest of the college. "We were able to go to the president for more money and, as a result of our success, we got an increase in our maintenance budget and have three new full-time people."

—Will Perry

Dr. Gwen Stahnke, previously with the University of Nebraska, has replaced the retired **Dr. Roy L. Goss**, who was turfgrass specialist at the University of Washington.

Mike Robinson of Seed Research of Oregon recently presented a $500 research grant to **Tom Cook**, representing the Oregon State University Department of Horticulture.

Judy Brede, Jacklin Seed Company's warm-season grass breeder, has been promoted to the position of Director of Warm-Season Grass Research. □

LETTERS

Customers pay for your labor

To the editor:

Right on with your editorial "As I See It" in the November issue. You have reaffirmed the fact that customers, not the company, pay our labor. In order to elevate the quality and maintain the talent we need to provide the professional services our clients are demanding, we must reevalute our pricing policies. Not only will wages have to go up, but we must learn how to provide full-time employment with minimal or no seasonal layoff, and we must provide a good quality benefit package.

My investigation this past season tells me that our young people completing two- and four-year courses in horticulture are being heavily recruited—many have as many as 12 job offers at very respectable wages. I am sure none of us wants to cut our business by 20 percent because we cannot get the necessary labor force.

Much will be said and written in the next few years about this serious problem, but your editorial hits it where it's at. Get the charges for services up, work efficiently and compensate our people acceptably.

Ritchie B. Skelton
Lied's,
Sussex, Wisc.

To the editor:

I am writing regarding the article "Biocontrols for the Green Industry" (November, 1989, LM), I agree that new developments in pest biocontrol research

continued on page 90

Remember when you had to power rake THATCH?

Research at Michigan State University rated Bio-Groundskeeper for Thatch Reduction® very effective for reducing thatch. The easy-to-apply liquid is especially attractive for commercial application: ALL NATURAL, EASY APPLICATION, in-tank mixing with fertilizers or herbicides, no fear of moisture damage, COST SAVINGS.

Call our toll free 800 # for distributor nearest you.

EARLY ORDER PROMOTION
AUBURN SPORTSWEAR JACKETS
Ask your distributor salesperson how to get them
FREE
or call this toll free number
1-800-383-4081

BIO GROUNDS KEEPER®
For Thatch Reduction

KLM Bio-Systems, Inc.
10700 Normandale Blvd.
Bloomington, MN 55437

612-884-4081
1-800-383-4081

Circle No. 128 on Reader Inquiry Card

Savage Heat Waves, Water Shortages, Parched Farms

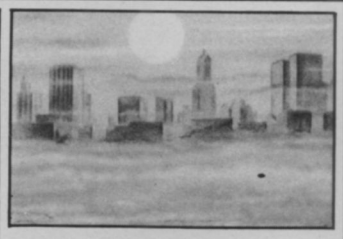
Year After Year After Year

The National Arbor Day Foundation Urges You to Plant Trees to Fight the Greenhouse Effect

The Greenhouse Effect may take hold of the Earth in your lifetime.

If that happens, the huge polar ice caps may melt, causing oceans to flood coastal cities. Drought will plague America's breadbasket. Rivers that supply water to cities will dry up. Heat waves will be commonplace.

A sharp increase in atmospheric carbon dioxide is a major cause of the Greenhouse Effect. Trees remove carbon dioxide from the atmosphere, but mankind has destroyed a third of the world's forests.

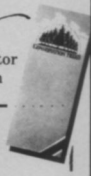


You can make a difference. Trees you plant may be our best line of defense.

Free Booklet. The National Arbor Day Foundation has published a free tree planting guidebook titled *Conservation Trees*. Return the coupon below and I'll send your free booklet by return mail.

John Rosenow

John Rosenow, Executive Director
National Arbor Day Foundation



Yes, Send my free *Conservation Trees* booklet.

Name

Address

City State Zip

Mail to: Conservation Trees, National Arbor Day Foundation, Nebraska City, NE 68410

Seven trips to the Super Bowl.

Seven times a winner.

That's Ph.D.®

Turf wizard George Toma first chose Ph.D.,® the turf-type ryegrass overseeding blend, when preparing the turf for Super Bowl XIV in 1981.

Since then he has sown Ph.D.® in Super Bowls XVII, XVIII, XIX, XXI, XXII, XXIII and the practice fields of Super Bowl XX.

For those keeping score: every time the Super Bowl is played on grass, that grass is Ph.D.®

That's because Ph.D.® germinates rapidly, quickly develops a strong root system, handles heavy, hard use and under ideal conditions will germinate in a week.

Ph.D.® is a blend of three world class turf-type ryegrasses.

It's the logical choice for the turf manager of any athletic field, including those that don't have a Super Bowl budget.

"Seed - the Gift of Life"

INTERNATIONAL SEEDS, INC.

P.O. Box 168 • Halsey, Oregon 97348 • Tel. (503) 369-2251 • Toll Free 1-800-445-2251 • TWX 910/240-5575 • FAX (503) 369-2640

Circle No. 126 on Reader Inquiry Card

Weed Control in the Environmental Age:

As turf management has become more sophisticated and environmentally significant, it has become absolutely essential for turf professionals to select a post-emergent herbicide that: • Has a broad enough spectrum to control virtually *all* problem weeds • Releases a minimum of active ingredients into the environment • Provides maximum safety to turf and adjacent trees and ornamentals • Reduces overall expenses (chemical *and* labor) to an absolute minimum. Read why only Trimec® Turf Herbicides can help you solve all of these problems.

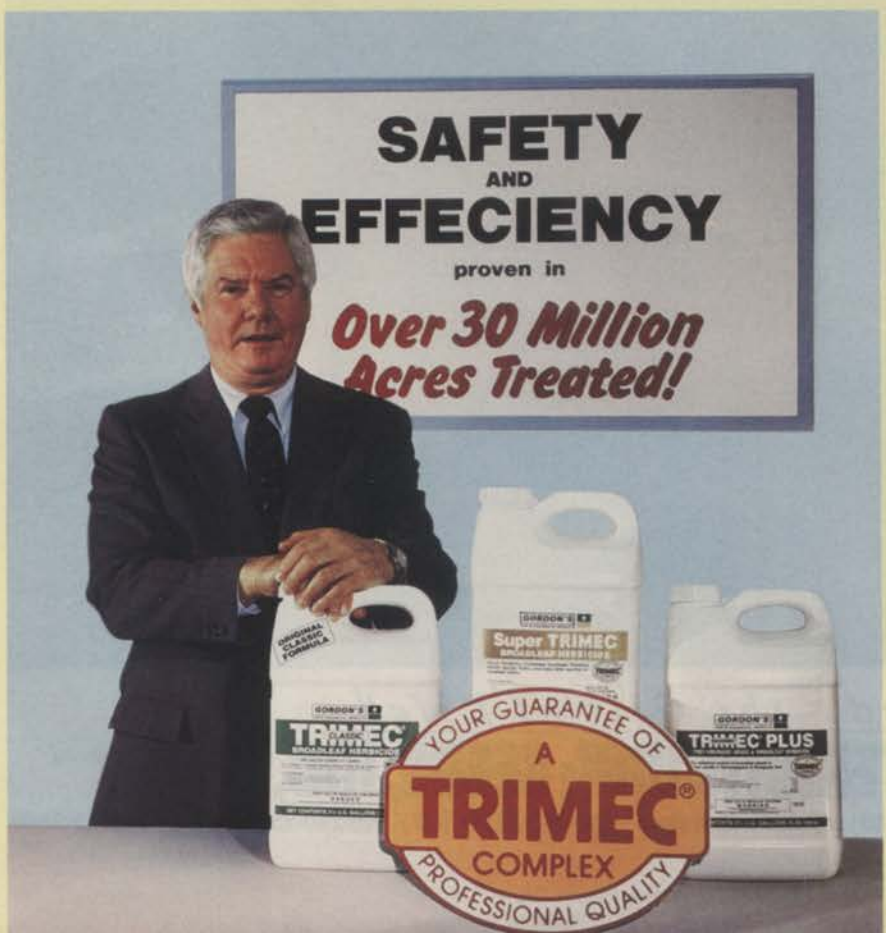
Of course you know that herbicidal activity is influenced by temperature, weed species, state of growth, and type of turfgrass. So a herbicide that would be effective in taking hardened-off spurge out of bluegrass would be totally out of place for treating dollarweed in bermudagrass.

Indeed, in light of today's complex weed control problems, the one-size-fits-all approach to herbicide selection has become totally obsolete.

As a matter of fact, in order to maximize the efficiency of weed control throughout the U.S.A., we have developed seven different Trimec Turf Herbicide formulations.

But even more important, we have developed a unique manufacturing process for each of these seven formulations so that the acid components are reacted together to form a *Complex* of unified salt, thus assuring you that every Trimec Complex will always be dependable, time after time.

For a comprehensive explanation of how a Complex differs from a formulator tank mix — and why this difference is vital to you in coping with weed control problems today — we invite you to take a close look at the schematic diagrams on the opposite page, which were drawn up for us by one of the most prestigious university professors ever involved in ornamental turf.



Start 1990 right and early — with Trimec

Start early in the season with a broadcast treatment of Super Trimec any time when the temperature is above 40 degrees . . . even in weather with intermittent rain or snow.

This not only enables you to get those over-wintering annuals at a time when you might otherwise have a void in your work schedule, but it also enables you to get them before their roots have a chance to compete with the turfgrass you are trying to thicken up . . . and you get *all* the broadleaves because Super Trimec has the broadest spectrum of any post-emergent broadleaf herbicide.

Everett Mealman, President of PBI/Gordon, asks: "Can any other herbicide manufacturer point to such a record of safety and efficiency?"

☐ **Super Trimec:** Unparalleled broadleaf control for cool-weather broadcasting and spot treatment of hardened-off summer annuals such as spurge, oxalis and ground ivy. One gallon covers 4 acres.

☐ **Trimec Classic:** Unmatched efficiency for controlling broadleaves when they are actively growing. One gallon covers 2½ acres.

☐ **Trimec Plus:** The ultimate post-emergent herbicide. Outstanding control of crabgrass and nutsedge, plus all the broadleaves controlled by Classic Trimec.

☐ **Trimec Southern:** Especially designed to control broadleaves in 2,4-D-sensitive southern grasses.

☐ **Trimec 992:** The applicator's formula. Especially designed for tank mixing with liquid fertilizer and other multiple tank-mix combinations.

☐ **Trimec Encore:** A Trimec Complex that contains no 2,4-D.

☐ **Trimec Bentgrass Formula:** Especially designed for use on bentgrass.

No matter how tough your weed problems, you can depend on a Trimec Complex for a specific solution.

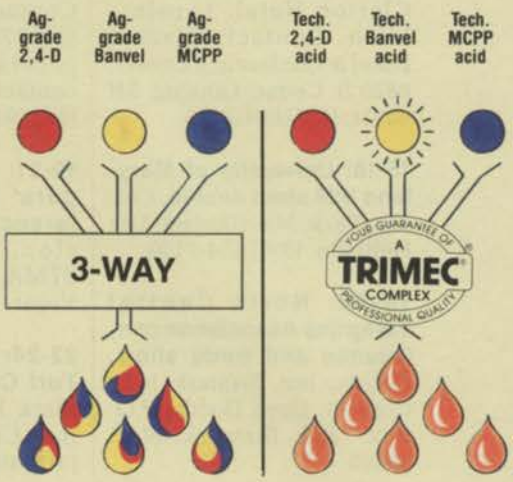
Furthermore, Super Trimec is not only extremely economical in terms of cost per acre, but it is also very friendly to the environment in that one gallon covers four acres.

If, however, you are unable to apply your first broadcast until later in the season — when the temperature is up around 75° and the weeds are actively growing — don't fret about the lost time. Simply apply the one-and-only original Classic Trimec. You'll get the same excellent weed control, and your cost per acre will be slightly less (which will help you justify not getting out earlier with Super Trimec).

Depending on the season and the condition of your turf, you may or may not need another application of Classic to treat summer annuals.

If crabgrass, goosegrass or dallisgrass become a problem, even in spite of your pre-emerge precaution, don't worry. Trimec Plus will take them out — usually with one application — without discoloring your Kentucky bluegrass or bermuda grass. And, of course, Trimec Plus will also control any broadleaves that are present.

Certainly Trimec Plus is the ultimate post-emergent herbicide . . . we have never introduced a new product that has met with such universal approval.



Color code: Red, 2,4-D; Yellow, Banvel; Blue, MCPP; Amber, Complex acid. Note: Colors are for code only and do not in any way indicate the color of the product they are intended to identify.

Why only a Complex is right for weed control in ornamental turf:

Historically, the chemicals used to control weeds in ornamental turf were developed for use in agriculture, where 80% weed control is considered acceptable.

And while Trimec was specifically developed for ornamental turf, it was originally formulated by tank-mixing ag-grade 2,4-D; ag-grade MCPP; and ag-grade Banvel® (dicamba).

Although the original Trimec immediately and dramatically improved weed control over that of any other herbicide, the tank-mixing procedure of ag-grade chemicals resulted in minute inconsistencies in the chemical composition of individual droplets, with consequent inconsistencies in weed control.

To eliminate these inconsistencies, we developed a technique of reacting the acid components of Trimec together to form a unified salt Complex in which every droplet of every production run would always be an exact mirror image of the total.

The manufacturing process involved in making a Trimec Complex is a trade secret, but the basic building block is known to all chemists. It is technical dicamba (the active ingredient of Banvel) that triggers the synergistic activity and makes it chemically possible to react the acids into a Complex.

Of course, it is this same Banvel synergism that enables Trimec Complexes to be so effective with such a small amount of active ingredients . . . which in turn contributes to Trimec's unparalleled safety record, as demonstrated by the fact that more than 30 million acres of turfgrass have been treated with Trimec, and there has never been an instance in which damage to trees and ornamentals was proven to be the result of root absorption traced to Trimec when applied according to label directions.

Technical Banvel acid is the key! And since PBI/Gordon has the exclusive turf use of technical Banvel acid in North America, only PBI/Gordon can make Trimec.

Do you have a weed problem?

One of our weed control specialists will gladly help you. Call toll-free, tell us your problems. No obligation. Ask for Sales Service.

1-800-821-7925

Schematic drawings show the differences between a tank-mix and a Complex

These drawings indicate that, in a formulator's tank-mix (left), the molecules of 2,4-D, MCPP, and dicamba do not combine to form a new molecule. Accordingly, each droplet will contain its own unique amount of one or more of the ag chemicals, and control may vary from droplet to droplet.

In a Complex (right), the three acids are reacted together to form a salt Complex. When this is formulated with the other important ingredients, wetting agents, dispersants and sequestrants, as well as with continuous analytical monitoring that includes the use of a high-pressure liquid chromatograph, the unique product that is Trimec becomes a reality. Every droplet is an exact mirror image of the total, and thus precisely optimizes the intended synergistic activity.

The differences between a tank-mix and a Complex become major when the goal is cosmetic excellence.

Banvel® is a registered trademark of Sandoz.
Trimec® is a registered trademark of PBI/Gordon.
© 1989, PBI/Gordon Corporation

pbi/gordon corporation
1217 WEST 12th STREET
P.O. BOX 4090
KANSAS CITY, MISSOURI 64101

TRIMEC®

BROADLEAF HERBICIDE

Circle No. 142 on Reader Inquiry Card

EVENTS

JANUARY

15-17: 60th Annual Michigan Turfgrass Conference, Clarion Hotel, Lansing, Mich. Contact: Clarion Hotel & Conference Center, 6820 S. Cedar, Lansing, MI 48911; (517) 694-8123.

15-18: University of Maryland IPM short course, College Park, Md. Contact: Lee Hellman, (301) 454-7130.

16-18: North Central Turfgrass Association conference and trade show, Holiday Inn, Bismark, N.D. Contact: Dave Dodds, P.O. Box 7262, Bismark, N.D. 58502.

17: New York Turf & Landscape Association conference and show, Westchester County Center, White Plains, N.Y. Contact: Bill Renzetti, P.O. Box 307, Scarsdale, N.Y. 10583; (914) 636-2875.

17-18: Western Plant Growth Regulator Society annual conference, Red Lion Inn, San Jose, Calif. Contact: Wanda Graves, (415) 793-4169. To submit papers for presentation, contact Warren Bendixen, (805) 934-6240.

19-21: Sports Turf Managers' Association conference and show, Houston, Texas. Contact: STMA, P.O Box 94857, Las Vegas, NV 89193-4857.

22-24: Midwest Regional Turf Conference, Adams Mark Hotel, Indianapolis, Ind. Contact: Jeff Lefton, (317) 494-9737.

24: Inland Northwest Turf and Landscape Trade Show, Spokane (Wash.) Convention Center. Contact: Jones & Associates, N. 908 Howard St., Suite 200, Spokane, WA 99201-2261; (509) 327-5904.

28-30: Wisconsin Arborist Association annual conference, Hyatt Regency, Milwaukee, Wisc. Contact: Richard Haas, 7300 Chestnut St., Wauwatosa, WI 53213.

29-30: "Think Trees" Conference, Holiday Inn Pyramid, Albuquerque, N.M. Contact: New Mexico State University Cooperative Extension, (505) 243-1386.

FEBRUARY

1-2: Univ. Alaska/Fairbanks Greenhouse and Nursery Conference, Soldotna, Alaska. Contact: Cathy Wright, S.R. Box 7440, Palmer, AK 99645; (907) 745-4119.

4: Women in Horticulture Conference, Sea-Tac Marriott, Seattle, Wash. Contact: Bill Collins, 18824 93rd Ave. NE, Bothell, Wash., 98011; (206) 485-1283.

4-7: Associated Landscape Contractors of America annual convention, Krystal Vallarta Hotel, Puerto Vallarta, Mexico. Contact: ALCA, 405 N. Washington St., Suite 104, Falls Church, VA 22046; (703) 241-4004.

7-8: Ohio State Univ. Lawn Care Seminar, Parke Hotel, Columbus, Ohio. Contact: Sue White, (614) 292-7257.

7-8: ALCM Landscape Conference, Sheraton Inn, Boxborough, Mass. Contact: Greta Staley, 288 Walnut St., Suite 300, Newton, MA 02160; (617) 964-0452.

14-16: American Sod Producers Association Midwinter Conference, Walt Disney World Hilton. Contact: ASPA, 1855 Hicks Road, Rolling Meadows, IL 60008; (312) 705-9898.

PRESEEDER™

"The ATI *PRESEEDER*™ has revolutionized lawn preparation as far as I'm concerned."

Craig Zimmerman of Neustadter & Zimmerman

Seeing is believing, and you can see the ***PRESEEDER*** ™ at one of our distributors.

The ***PRESEEDER*** ™ prepares professionally finished seedbeds, levels and removes debris.

- Two models work with 16 to 45 HP tractors
- Compact design for even weight distribution/stability
- Spiraled rotor teeth for smoother operation
- Front rotor angled to move rocks for easy pick up.

From rough grade to finished seed bed, the ***PRESEEDER*** ™ does it right.

Distributorships available in some areas

ATI CORPORATION

325 West Main Street • New Holland, PA 17557
In PA (717) 354-8721 • FAX (717) 354-2162
Outside PA (800) 342-0905

REVOLUTIONIZING LAWN PREP

Circle No. 101 on Reader Inquiry Card

UNLEASH THE BIG CATS.

The Jacobsen Turfcat family . . . the rugged breed that thrives on tough conditions.

Tall, thick grass. Undulating terrain. Even snow. You name it. Jacobsen Turfcats do more than survive tough operating conditions. They master them. Quickly and efficiently.

Pounce on one of seven gutsy Turfcats from 17-hp to 36-hp, in 3-wheel and 4-wheel models. Exclusive 2-speed, full-time, limited-slip transaxle delivers maximum power and traction in low range, to cut more and climb higher. Shifting to high range increases transport speeds, so you lose less time between jobs.

For superior stability, Turfcats have a low center of gravity and a hill-hugging, wide-track stance. Plus, quick, easy steering lets these agile cats dart around trees and in-and-out of tight spots.

The largest Turfcats give you an exclusive hydraulic implement drive system that eliminates belts, drive shaft and universal joints for reduced maintenance. And the harder you work this power delivery system, the better it works.

Tackle mowing tasks with your choice of durable 50″, 60″ or 72″ rotary decks. The rugged Deep-Tunnel rotary decks channel clippings out faster to increase cutting capacity without windrowing or clumping. In areas where thrown objects and noise are a concern, use the 50″ or 60″ fine-cut flail decks with downward discharge and a cut rivaling reels.

Turfcats won't hibernate once your mowing's done. Blades, brushes, snow blowers and a variety of other attachments keep these cats producing year-round.

So take a Turfcat for a run. Arrange a free demonstration with your Jacobsen distributor today. Attractive lease and finance plans available. Or for more information contact: Jacobsen Division of Textron Inc., Racine, WI 53403.

JACOBSEN
TEXTRON
Jacobsen Division of Textron Inc.

© Jacobsen Division of Textron Inc. 1988 J-6-8

Circle No. 127 on Reader Inquiry Card

TOURNAMENT-LEVEL MANAGER

The four courses at Pebble Beach represent the ultimate challenge in country club management. As director of operations, D. J. Pakkala wouldn't have it any other way.

By Terry McIver, associate editor

As Director of Golf Course Operations for the Pebble Beach Co., D.J. Pakkala manages four of California's finest country clubs. He faces the challenges of multiple golf course management daily.

Just imagine your busiest day multiplied by four. The simple math yields a complicated answer.

Pakkala agrees that the challenges of being in charge of four courses are entirely different than the responsibilities for one. But he delegates well to each of his superintendents: Carl Rygg, Pete Bibber, Larry Norman and Bill Davis.

"Thanks to the climate, we're growing grass on a daily basis, and I serve as a consultant," says Pakkala. "I'm an agronomist who can answer my staff's questions and advise them on the way we ought to maintain the course."

But Pakkala does not rule with an iron hand. He has earned the respect of his superintendents, largely for his respect of each man's talent and experience.

"D.J. allows each of us to exercise individual expertise in maintaining the courses," says Rygg. "There are high standards for each course, but we can address our problems with our individual techniques.

"He's also positive about any situation. With D.J., the glass is always half-full."

Pakkala's responsibility for the quality of play and appearance of the Pebble Beach, Spanish Bay, Spyglass Hill and Del Monte courses makes him a different sort of public relations specialist. He represents the Pebble Beach Co., "and that means representing perfection; there's always room for more."

That perfection has made the Pebble Beach courses the locale for many a television commercial or magazine ad. And of course, many a golf pro has visited the famed links. The U.S. Open was played there, and it returns in 1992. Thus, Pebble Beach holds a place in golf history as the only public course in the U.S. to host a major professional tournament.

'I once realized that if I were to die tomorrow, the golf course would still be here. That puts it into perspective.'

—D.J. Pakkala

Professionalism grows

Pakkala thinks one man in charge of many tracks is becoming a common job description, thanks to a wealth of qualified turfgrass experts. Good college training is thus an important first step for turf managers.

"The business is now so technical," says Pakkala. "You're more involved with the environment, more familiar with the laws that have to do with chemicals and their effects on the environment. I don't think there's any other way of being successful in the business without having been trained in a college or university. A lot are trained in business, economics or accounting and then go into turfgrass management. The love of the outdoors, of being in a growing environment, is the common thread."

And of course, there's the love of the game. "Most all (superintendents) have some love of golf," says Pakkala. "It fits in well with their personal lifestyle."

Opportunities abound

Although many qualified experts occupy the turfgrass profession, golf's growth will bring increased job prospects. Pakkala believes, as do many industry observers, that the golf boom will continue for the next 15 years.

"I also see a trend," he predicts, "in which many development companies are hiring people like myself, people who have been in the business for 15 to 20 years, to manage their golf facility from start to finish. Developers need a person to represent the owner, who can relay information to the architect and contractor, and to serve as a liaison between the architect and developer.

"As I understand it, the only thing to keep us from the one-course-per day goal is lack of builders. There are many architects and designers, but we need more builders."

Choosing a life

Pakkala's own passion for golf and the green industry began when he was was 11 years old. His desire to play the game was so strong he'd hitchhike to the local course to get in a game before dark. Sitting down later to a warmed-over dinner was the trade-off, but to D.J., it was a worthy compromise.

His original career interest was in mathematics. But during college, his love of the outdoors guided his instincts to change his major to turfgrass science.

"I didn't know whether I wanted to be punching computers or working in an office all day long," he remembers. "That's when I made the change."

The oceanfront links of Spyglass Hill are under the watchful eye of D.J. Pakkala and superintendent Bill Davis.

His first superintendent assignment was at age 29.

Pakkala established another first for superintendents when he did occasional television commentary for nationally-broadcast tournaments such as the Bob Hope Classic and Dinah Shore Open in Palm Springs, Calif. "I used my experience with the game and my turf expertise to provide unique insights into course design and turf characteristics, and how they affect tournament play," he notes.

Biologicals an answer

Pakkala's multi-course duties expose him more than ever to the conflicts between chemical companies and environmentalists. Pakkala supports developments in biotechnology as a solution.

"I believe that chemical producers are doing their utmost to work with the EPA and environmentalists in producing products that are safe on the environment," he says. "And they're spending a lot of money in research and development to put their products on the market. The more they can work within integrated pest management—using natural means to take care of those pests they have difficulty with—the more they will be working together with the environmentalists...and the safer we're all going to be.

"I think it's an educational process. The GCSAA and the USGA have done a lot of work and are still working on it, sharing with the uninformed public what we're really doing."

D.J., Tom Weiskopf, left, and architects discuss design issues at the Del Monte course.

Pakkala says the biggest challenge to any greens manager is "to tie it all in with Mother Nature. The hardest thing to deal with is the 24-hour-a-day possibility of changes in the weather. "Weather affects everything we do as managers, from the amount of play, to diseases that may be brought about by certain weather conditions."

'I believe chemical producers are doing their utmost to work with the EPA and environmentalists in producing products that are safe on the environment.'

—D.J. Pakkala

Work hard, stay healthy

If professional golf course managers are to keep pace with rapid change in the industry, they must, Pakkala believes, take care of themselves first.

"Superintendents on today's best courses are under stress every day," he explains. If the course is a member-only operation, a superintendent could have numerous people offering opinions or complaints. For these reasons, Pakkala believes it is increasingly important that a superintendent not forget his well-being, his family's well-being or his job responsibilites.

He insists that, "We've got to become more aware of ourselves as persons. Lots of guys work 12-hour days for 12 months of the year. We need to be conscious of that. I once realized that if I were to die tomorrow, the golf course would still be here. That puts it into perspective.

"There is a tendency," Pakkala explains, "to take the attitude that it's *my* golf course, and it's *my* responsibility. That's certainly noteworthy. But not to the extent that we forget about everything else."

Being on the Pacific shoreline offers Pakkala a welcome escape should his day ever get a bit too hectic.

"Go down to the ocean; look out and watch the gulls flying around without a care in the world. The Lord takes care of them. It leaves you with the impression that nothing really matters." **LM**

COMING
IN THE FEBRUARY ISSUE
OF
LANDSCAPE MANAGEMENT

STRATEGIES FOR MANAGING WATER TODAY AND TOMORROW

Landscape and turf managers shouldn't miss this eight page supplement in next month's issue which explains the practical uses and benefits of Aquatrols Water Management Products. Find out how AquaGro®, Super-Sorb® and FoliCote® make the most efficient use of available water to help you grow and maintain healthy turf, trees and shrubs.

AQUATROLS
The Water Management People

Circle No. 165 on Reader Inquiry Card

"The comfort and safety of our employees is our top priority. Our Hustlers are designed for both."

Hustler mowers are better by design. You have total control of speed, turns and braking in one hand. You'll experience less fatigue, and that creates a safer work environment.

Quality construction means reliability. Excel uses the highest grade components to ensure years of safe, dependable operation. Hustlers require less daily maintenance so you can get started earlier in the day.

When you're comfortable, you're more productive. The 640 Hillsider self-levels to keep the driver and engine in an upright position. It has constant six-wheel drive for stability and superior slope-holding traction. Seat belts and certified ROPS are standard on the Hustler Hillsider.

Buy Hustler for quality engineering. For comfort, safety, and reliability, nothing mows slopes better than the Hustler Hillsider. Call Excel toll free for a **FREE** Hustler Product Guide, or see your local Hustler dealer today.

Diesel-powered Hustler 640 Hillsider with the 72" Heavy-Duty Dual-Trim mower deck.

Excel Hustler...Still Out Front!

1-800-835-3260

(In Kansas and Canada 316-327-4911)

Excel Industries, Inc.
Hesston, KS 67062-2097

EXCEL HUSTLER
Turf & Grounds Equipment

© 1989, Excel Industries, Inc.

Circle No. 117 on Reader Inquiry Card

Introducing the fine art of broadleaf weed control. New Gallery.™

Look closely. This may be the last time you'll see these broadleaves on display.

Elanco introduces the unique preemergence broadleaf weed control for golf courses. New Gallery 75DF. An original work of art. And science. With a new chemistry so advanced, it outdates postemergents, saving you time and labor costs.

The Gallery collection includes 44 of your toughest broadleaves such

as spurge, chickweed and white clover. With no reproductions allowed.

All you'll see is masterpiece turf. Free from broadleaves. And free from injury. New Gallery is actually more tolerant to all major species of cool and warm season turf, including bentgrass, than other herbicides. And there's no risk of off-site damage to nearby ornamentals.

Discover the fine art of broadleaf weed control with new Gallery. See your Elanco distributor. Or for a free brochure, call toll-free: **1-800-352-6776.**

Elanco Products Company
A Division of Eli Lilly and Company
Lilly Corporate Center
Dept. EM-455, Indianapolis, IN 46285, U.S.A.
Gallery*—(isoxaben, Elanco)

Circle No. 115 on Reader Inquiry Card

TOUGH ROUGHS

Does your golf course look a little 'rough around the edges?' There's a way to polish that look, as proved by courses in Pittsburgh and Cleveland.

"On those areas I treated, it looked like someone spray-painted the intermediate roughs a dark green," says Ed Lach, of Edgewood Country Club.

If it's not one thing, it's another.

The trend toward lower fairway mowing heights and other cultural practices has created a neater, lusher fairway appearance and helped reduce *Poa annua* on many golf courses in the northern U.S. But better looking fairways only make shaggy or worn-out roughs look worse.

So after focusing their primary attention on fairways, greens and tees for many years, some golf course superintendents are now concentrating on getting their roughs up to par.

Penn State turf graduates Ed Lach and Terry Bonar are prime examples.

Since becoming golf course superintendent at Edgewood Country Club in Pittsburgh six years ago, Lach has upgraded the 18-hole golf course's overall appearance dramatically. Aesthetics have been improved by adding a number of flower and ornamental beds and planting additional trees throughout the roughs.

Building character

When Lach began contouring the fairways to "give them a bit of character," part of his fairways became the edges of his roughs. As such, they contained a high percentage of *Poa annua*. These largely poa intermediate rough areas take a beating during summer months, and there is a lack of definition between fairway and rough.

"Golfers tend to drive their carts along the edges of the fairways. Those areas suffer most from traffic damage," says Lach. "I've been overseeding with ryegrass for several years since ryegrass holds up much better to traffic. But I never had much luck getting a stand until two years ago."

In 1987, Lach sprayed the intermediate roughs around three of his fairways with Prograss herbicide. He made two applications in a 15-foot swath after aerifying and overseeding the areas.

"I really liked the results," says Lach. "Prograss killed the *Poa annua* so the ryegrass could take hold. There was a night-and-day difference the next spring between those three fairways and the rest of the course. On the areas I treated, it looked like someone had spray-painted the intermediate roughs a dark green. The ryegrass population increased to around 85 percent. I was so impressed I treated all of my intermediate roughs with Prograss the following year."

Lach is also updating his tree maintenance procedures. Instead of spending countless man-hours hand-trimming under trees, his crews spray a mixture of Roundup and Surflan in a neat circle around the trunks. As well

© Ringer Corporation, 1990

Ringer will give your course a world of improvement.

Ringer Greens Restore® and Turf Restore® give you a whole new approach to greener greens and fairer fairways.

Natural protein, slow release nutrition. Ringer products use natural protein sources for slow-release nutrition without chemicals. Applied at recommended rates, Greens Restore® and Turf Restore® will not burn.

More than a quick fix. Because they rely on a unique microbial action, Ringer products work by enhancing natural processes. Your turf has a healthier environment. And it keeps getting better and better.

Scientifically formulated, environmentally sound. The Restore® line was scientifically developed for professional use. It fits right in with your present program. It strengthens your current disease control efforts. And because Ringer Greens Restore® and Turf Restore® are environmentally sound, they improve the world a little as they improve your course a lot.

If you don't like your green, we'll send back your greenbacks. Try Greens Restore® for a season on a practice or problem green. We'll return your money if you aren't more than pleased with the results. Call or write for details and the name of your distributor.

RINGER®
Better, naturally

Ringer Corporation, 9959 Valley View Road, Minneapolis, MN 55344, 612-941-4180

Circle No. 148 on Reader Inquiry Card

Timely aerification and fertilization, proper chemical applications and deeper, less frequent irrigation reduce *Poa annua* on Lach's course.

as saving time, the practice gives the course a neater appearance.

One improvement seems to lead to another. Lach says his next step is to move out another 15 feet into the rough with his Prograss treatment so that he gradually converts most of his rough from *Poa annua* to ryegrass.

"When the rest of the course looks so good, it's hard to resist cleaning up the remaining rough," he explains.

And in Cleveland...

If it hadn't been for last summer's blistering drought, it would have taken Bonar much longer to improve roughs on Canterbury Golf Club's 18-hole course. Rough quality didn't measure up to the rest of the course, which is ranked in the top 100 courses in the country. With members playing up to 25,000 rounds annually and 11 national tournaments held on the course to date, it is continually in the spotlight.

Though Bonar has few problems with *Poa annua* on the course's bentgrass greens and fairways, he could never tackle the weed in his roughs. In spite of an intense six-year overseeding program involving cutting in ryegrass seed with a Rogers Groove Seeder, poa remained the primary grass in his roughs.

But the drought last year knocked the Canterbury roughs back to almost nothing. The double-row irrigation system only reaches part of the roughs and Bonar had no way to keep the poa alive.

"I decided to try Prograss since it was almost a no-lose situation," says Bonar. "If the product didn't work, I was only out the money for chemical and application."

Before seeding in 1988, Bonar scalped the roughs with rotary mowers set as low as they go—about one inch. He then aerified eight times with a tractor-drawn aerifier to really loosen up the soil. In late August, he started overseeding roughs with a mixture of three ryegrasses.

Bonar cut in about 80 pounds of ryegrass seed per acre with the Rogers unit and broadcast another 80 pounds per acre. His crews seeded 30 to 45 feet back from the fairway into the rough, covering about 25 acres of the course's 80 acres of rough.

Noticeable Improvements

Bonar made two Prograss applications at one gallon per acre each, a month apart. He sprayed with a Cushman sprayer, covering 30 feet around each fairway. Though he seeded 25 acres, Bonar only sprayed 20 acres. The difference between the areas made an interesting test plot.

"There was a definite visual difference between the two areas the next spring," he notes. "Where we seeded and didn't spray, the ryegrass came up, but so did the poa. But where we seeded and sprayed, the poa is negligible. I was amazed with the results. Our roughs are thick and great now."

Now that his ryegrass stand in the roughs looks so good, Bonar says it makes the roughs around his greens look bad. He now wants to re-sod those areas with bluegrass.

He is improving other areas of the roughs as well. To round out his nine-member full-time crew, he hired an arboriculturist last year to take care of the trees scattered throughout the roughs. After identifying and tagging all 2000 trees over four inches wide, he now has an overview of how to better maintain them. **LM**

MOWING FOR BEAUTY

Changes in the mowing program have made the biggest differences in aesthetics at Pittsburgh's Edgewood Country Club.

"We switched from gang mowers pulled by a tractor to three Toro GM-3000 triplex mowers and one 350-D five-gang unit," says superintendent Ed Lach. "The old gang mowers would leave long, uncut grass in many little dips and valleys of the turf. This would often give a golfer an unfair lie on the fairway. Our triplex mowers allow us to cross-cut and angle-cut, leaving a neat, smooth appearance."

Daily routines

Now his crews mow half the fairways with triplex mowers and the other half with the 350-D one day. The following day, the procedure is reversed. They mow fairways six days a week at slightly lower than ⅝-inch and collect clippings with the triplex units.

Lach starts out every spring by rolling and aerifying all greens, tees and fairways and top dressing the greens. His crews also vertical mow and brush the greens several times each spring. Greens receive three or four "spikings" and light top dressings through the summer. Then fairways, greens and tees are aerified again after Labor Day.

Anti-poa campaign

Many of Lach's practices revolve around reducing populations of *Poa annua*. Annual bluegrass gained a foothold on the Edgewood course soon after it was built in the 1920s.

By following such cultural practices as timely aerification and fertilization, proper chemical applications, collecting clippings, and trying to irrigate more deeply and less frequently, Lach is slowly decreasing the amount of poa on his fairways, greens and tees. These practices reduce compaction, suppress seedhead formation and encourage deep-rooted turfgrasses such as bentgrass and ryegrass. □

Is your weed control controlling you?

You need to reseed, but you can't. That's the trouble with many herbicides. They lock you out of your turf program for months.

Not Balan.® It's the preemergence herbicide that lets you reseed your turf only six weeks after application (or 12 weeks at the higher three-pound southern rate). Without harming your new seedlings.

That's how predictable Balan is. Its weed-controlling activity is reduced enough to permit reseeding. You can even apply Balan in the spring to turf seeded last fall.

What you'll see is turfgrass. What you won't see are weeds. Problem weeds like crabgrass and goosegrass. Balan has more than 20 years of experience in preemergence weed control.

Control this dependable is now easier to use—with Balan DF. It's a new dry flowable formulation that mixes easily with less dust. Just one more way Balan puts you in control of your weeds and your turf management program. Call your Dow Elanco distributor. Or for technical assistance, call toll-free: **1-800-352-6776.**

DowElanco
4040 Vincennes Circle—Suite 400
Indianapolis, IN 46268 U.S.A.

Balan®—(benefin, DowElanco)

Circle No. 116 on Reader Inquiry Card

How to keep your acres and acres of earth looking like a little slice of heaven.

Adopt a Mobay fungicide program, and start producing turf that's a cut above.

Start with BAYLETON® Turf and Ornamental Fungicide. It has an unequaled reputation for stopping *dollar spot* while giving you broad spectrum disease control.

In addition, BAYLETON eliminates costly multiple applications. You see, it works systemically, entering the plant and working from the inside. Since BAYLETON won't wash off, it lasts longer.

For *leaf spot,* treat with DYRENE® Turf Fungicide. Quite simply, nothing works better. Plus, the flowable formulation of DYRENE gives you longer residual control than regular contact fungicides. And that adds up to a lower cost per day of control.

Best of all, both BAYLETON and DYRENE have a long history of unmatched performance.

For more information, contact your Mobay distributor or Mobay sales representative. They can set you up with a fungicide program that'll help you keep your acres looking like a little heaven on earth.

Bayleton
Dyrene

Treat your fairways with BAYLETON and DYRENE. It keeps your customers from tracking disease up onto your tees and greens, and raises the overall quality of your course.

Apply BAYLETON for broad spectrum control on a wide variety of ornamental plants.

Plant turf varieties that resist diseases in your area. Apply a balanced fertilizer. Aerate, irrigate, and dethatch periodically.

BAYLETON and DYRENE are Reg TMs of Bayer AG, Germany ©1989 Mobay Corporation

In addition to dollar spot, BAYLETON prevents summer patch, anthracnose, and other major turf diseases.

DYRENE prevents brown patch and leaf spot with excellent residual control.

Mobay Corporation
A Bayer USA Inc. Company

Bayer MOBAY

Specialty Products Group
Box 4913, Kansas City, MO 64120
816-242-2333

Circle No. 136 on Reader Inquiry Card

WHO CALIBRATES YOUR SPRAYER?

University of Nebraska researchers found that only one of six golf courses are accurately applying pesticides. What would they find at your course?

by David Varner, Ph.D., and Robert Grisso, Ph.D.

Last summer, researchers visited 53 of the 60 golf courses of the Nebraska Golf Course Superintendent's Association (NGCSA) and found that only one of six were accurately applying pesticides.

Their calibration accuracy study showed that only 17 percent of the courses applied pesticide carrier volumes within five percent of their intended amount (though this number may be conservative because possible tank mixing errors were excluded).

(Spray equipment not delivering within five percent of the desired pesticide carrier volume should be adjusted and recalibrated according to the *Guide for Private and Commercial Applicators.*)

How bad was it?

The average applicator error was 26 percent. However, the magnitude of errors ranged from a mere 0.1 percent to an alarming 177 percent over-application.

Cooperators who over-applied did so by an average of 19 percent. For a quick estimation of over-application costs, assume an average preventive rate of Daconil 2787 at 4 oz. per 1,000 sq. ft. was used (Daconil 2787 was the most frequently-used pesticide among the study's cooperators at an average of $37 a gallon).

Correctly applied, the cost of Daconil would be $1.16 per 1,000 sq. ft. However, using the average over-application error of 19 percent, the cost of application would be an additional $0.21 per 1,000 sq. ft. These costs escalate when considering the total treated area with multiple treatments throughout the season.

In many turf programs, pesticides are key elements in management programs, but are useful only if applied according to label directions. If not properly used, pesticides may become our worst nightmare rather than a proven management tool as we begin the 1990s.

Over-application may also cause turf damage, excessive pesticide residue, increased potential for human exposure and water contamination through surface run-off and percolation.

Another costly venture

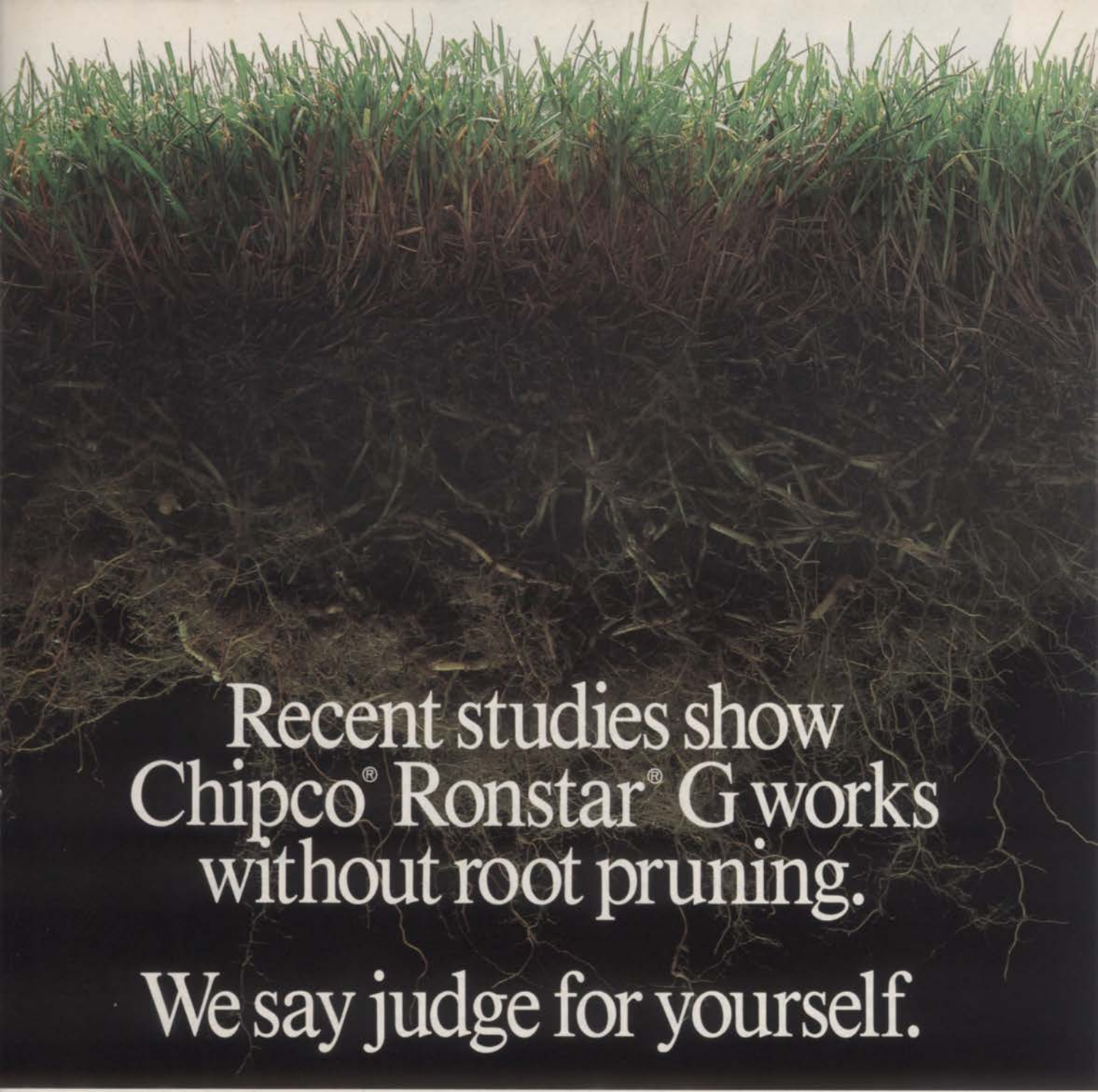
Golf courses are unique in the fact that they are often positioned near residential areas with a body of water nearby, and are designed to attract people for entertainment. This makes awareness and accuracy of pesticide application even more important.

Those who under-applied pesticides did so by an average of 34 percent. This can be just as costly as over-application. Under-application may require additional applications, which increase pesticide, fuel and labor costs.

In addition to quantity of pesticide applied, sprayer performance was evaluated on the quality of pesticide application. Quality of application refers to the consistency of nozzle discharge across the boom. This was determined by measuring discharge measurements from each nozzle along the boom.

continued on page 50

Frequency of sprayer calibration was found to be closely associated with application accuracy. Two-thirds of the applicators who calibrated before each spray operation were delivering within five percent of their intended amount.



Recent studies show Chipco® Ronstar® G works without root pruning.

We say judge for yourself.

Let's face it, the last thing you need from a turf herbicide is root damage. That's why so many golf course superintendents are making CHIPCO® RONSTAR® brand G herbicide their first choice for broad-spectrum weed control. Root pull studies conducted at a leading university show that CHIPCO® RONSTAR® G herbicide works without pruning turf roots. That's important, because healthier roots mean stronger, more durable turf. Turf that stands up better to stress. Best of all, just one pre-emergence application of CHIPCO® RONSTAR® G provides season-long control of 25 tough broadleaf and grassy weeds —including goosegrass and crabgrass. You'll also appreciate the fact that CHIPCO® RONSTAR® G won't leach out or move laterally through the soil. And it's labeled for use on a wide variety of ornamentals. So you can apply it to ornamental plantings at the same time you do your turf. You'll get up to 120 days of weed-free control.

Plus CHIPCO® RONSTAR® is also available as a wettable powder and in granular fertilizer formulations under well known brand names.

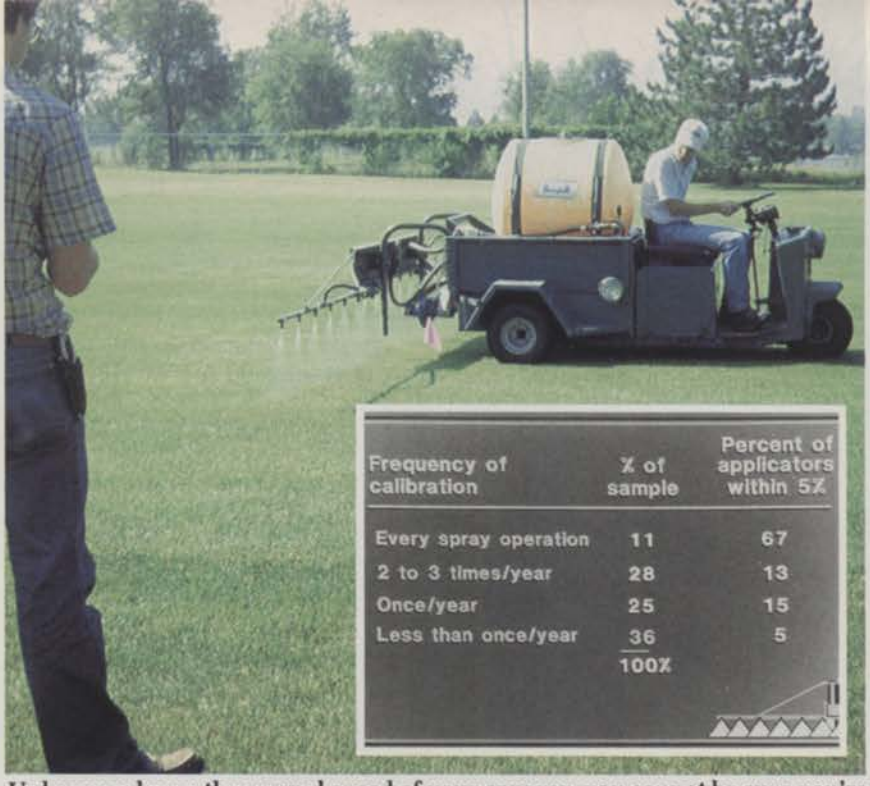
So judge for yourself. You'll discover why CHIPCO® RONSTAR® is the number one turf herbicide on the course today.

Chipco® Ronstar® G
Brand Herbicide

RHÔNE-POULENC

As with any crop protection chemical, always read and follow instructions on the label. CHIPCO and RONSTAR are registered trademarks of Rhone-Poulenc. © 1988 Rhone-Poulenc Ag Company

Circle No. 146 on Reader Inquiry Card



Frequency of calibration	% of sample	Percent of applicators within 5%
Every spray operation	11	67
2 to 3 times/year	28	13
Once/year	25	15
Less than once/year	36	5
	100%	

Unless you know the ground speed of your sprayer, you cannot be sure you're not over- or under-applying pesticides. Therefore, accurate, legible speed sensing mechanisms are essential sprayer components.

Eighty-four percent of the cooperators were within recommended guidelines. This suggested that cooperators are maintaining nozzles appropriately. If two or more nozzles were discharging more than 10 percent above or below the discharge average, operators were advised to replace them all.

Researchers found no association between consistency of application and carrier volume accuracy. This shows that it is more important to regularly check sprayers for both types of accuracy.

Frequency of calibration was closely associated with application accuracy. Two-thirds of the applicators who calibrated before each spray operation were within the 5 percent application error criteria. Comparatively, only five percent of those who calibrated less than once a year were within 5 percent. More than one-third of the cooperators calibrated less than once a year.

Calibration methods

The "known area" calibration procedure was the most common procedure used on golf courses. However, only 14 percent of the superintendents employing this procedure were considered accurate applicators.

The most accurate cooperators were those who used spray monitor and controller systems. Sixty-seven percent of these applicators were accurate.

The most common application equipment used on Nebraska golf courses were Cushman Trucksters equipped with Broyhill sprayers, centrifugal pumps and fan nozzle tips. A common problem among sprayers in the study involved pressure gauges showing a system pressure different than the actual nozzle pressure.

Random inspections of pressure consistency among sprayer systems found differences as large as 30 psi. The most probable cause for most of these pressure differences were faulty gauges. Many gauges showed signs of corrosion, had broken crystals, or had a measuring range too large to accurately measure typical operating pressure.

Nozzle problems

Restrictive plumbing systems, which included excessive lengths, inadequately sized and kinked hoses, improper screen sizing and anti-drip devices, were other faults leading to reduced pressure at nozzles.

Educational programs focusing on pesticide application accuracy should continue to address safety concerns for both the applicator and the environment. These programs need to educate applicators to calibrate their equipment and explain why calibration should be mandatory for any individual who deals with pesticide applicators. Applicators need to be certified for their own safety, the safety of their clientele, the general public and the environment.

Learning procedures

Applicators should learn to use one or two calibration procedures consistently to assure regular pesticide application accuracy. Procedures should include measuring and adjusting system pressure, ground speed and nozzle discharge. These procedures should be used before each spray operation. Equipment failure and changing sprayer operations warrant this routine.

Sprayer discharge capacities and pressure gauges should be tested for adequacy and accuracy. Pressure gauges should either be replaced or tested at least once a year.

To increase both awareness and skills in pesticide application, Cooperative Extension offers private and commercial pesticide certification training sessions. Proper sprayer calibration includes the fine tuning of both the quality and quantity of pesticide application. These requirements dictate the proper adjustment of sprayer speed, pressure and nozzle discharge.

Uniformity of application may be increased by using nozzle materials that are more durable than the traditional brass or the economically-priced plastic. Stainless steel nozzles and plastic nozzles with stainless steel inserts have a slightly higher initial cost but last up to four times longer. Excessive losses and over-application of pesticides may be eliminated by using anti-drip devices.

Sprayer system pressure must be

Nebraska study at-a-glance

Who: Nebraska researchers interviewed 53 of the 60 golf course superintendents in the Nebraska Golf Course Superintendent's Association (NGCSA).

What: On-site interviews and sprayer performance tests were conducted to determine how accurately superintendents were applying pesticides.

The results: Only one of six cooperators was found to be applying pesticides within five percent of their intended amount. The average application error was 26 percent, with the magnitude of error ranging from 0.1 percent to an alarming 177 percent.

Eighty-four percent of the cooperator's were within recommended guidelines for sprayer performance. The most accurate applicators were those who calibrate sprayers most often. □

We just eliminated your last excuse for buying a converted golf cart.

Introducing the Cushman® GT-1. Suggested retail price: $3,564.00*.

When you can have Cushman quality at a competitive price, there's no reason to accept second best.

The new Cushman GT-1 utility vehicle will outperform and outlast any converted golf cart on the market. Its frame and chassis are stronger and more durable. You'll find a bed made of 14-gauge steel instead of 16-gauge steel. One-inch axles instead of 3/4-inch axles. And a proven Kohler industrial engine that's more reliable and easier to maintain.

When you need a utility vehicle that's been specifically designed for work instead of one that's been converted from play, contact your Cushman dealer for a GT-1 demonstration. Or call toll-free 1-800-228-4444 for more information today.

CUSHMAN®

BUILT TO LAST

*Does not include sales tax, freight, or dealer prep; suggested price listed in U.S. dollars. Prices may vary with dealer and region.

8024 © Cushman Inc. 1989. All rights reserved.

A Ransomes Company
P.O. Box 82409, Lincoln, NE 68501

Circle No. 297 on Reader Inquiry Card

Accurate ground speed is essential

Accurate pesticide application requires that the operator know exactly how fast the sprayer moves over the ground surface. Yet many of the superintendents interviewed were unable to determine this due to faulty equipment or new tires.

Inaccurate speed sensing mechanisms was determined to be a significant equipment problem. In most situations, ground speed was estimated by correlating power take-off (PTO) speeds with driving gears. Many applicators had to guess ground speed because speed tables used with PTO speeds had deteriorated beyond legibility or tires had been replaced with a new size, making the table invalid.

Nearly 63 percent of the cooperators had ground speed errors of more than five percent. This automatically places the cooperator in the inaccurate applicator category unless another factor compensates for the error during calibration.

Because of wheel slippage and rough surface conditions, the actual speed is often different from the tachometer and speedometer readings.

For an accurate measurement of ground speeds less than six miles per hour, mark off a distance of 220 feet. Measure the elapsed time in seconds required for the spray unit to travel 220 feet. The speed is calculated as: mph = 150/seconds timed. If the ground speed is above six miles per hour, mark off a distance of 440 feet and calculate as mph = 300/seconds timed.

—The authors□

maintained within nozzle specifications. Operators outside of this specified range cause spray pattern distortion, accelerated nozzle wear and improper discharge rates through nozzles. It is important to remember that the relationship between nozzle pressure and discharge rate are not linear. In fact, the pressure needs to be increased by almost four times to double the discharge rate.

Using pressure gauges

The pressure discrepancies may be monitored by installing a pressure gauge on the spray boom. This is a very practical way of monitoring the actual boom pressure. The current pressure gauge should also be maintained as a check on the system. Antidrip devices can reduce system pressures by three to five psi, so adjust your pressure to meet nozzle requirements accordingly.

A sprayer monitor or controller that changes system factors or alerts the operator of system changes or problems would be a good investment.

A monitor is a device that measures flow, pressure and speed. It uses electronic sensors for measurements but makes no adjustments. A controller adjusts for various spraying conditions by increasing or decreasing flow or pressure. But be aware that these systems are not infallible. For example, if a nozzle plugs, a controller increases the pressure to maintain flow throughout the system and ignores the blockage from a single nozzle.

Spray equipment will apply pesticides properly if operated and calibrated.

Eyes don't have it

It is not enough to visually inspect sprayer performance. The eye cannot detect differences in the nozzle discharge unit until it nears a 50 percent error. Operator's manuals include tables to show spray volumes for various nozzles, spacings, pressures and ground speeds. Use this information to initially set up the sprayer, then use proper calibration procedures to "fine-tune" the sprayer for accurate application.

Pressure gauges may be tested using a dead weight tester (shown here). Inaccurate pressure readings can cause pattern distortion, accelerated nozzle wear and improper discharge rates (photos courtesy of Dave Varner).

Awareness and accuracy of pesticide application is critical.

Proper tank mixing is also critical. Incorrect tank mixing could make pesticide application errors worse. Remember to read and follow pesticide label directions and safety considerations. Obtain educational materials for training for all personnel using or working around spray equipment. **LM**

Dr. David Varner is an extension agent and Dr. Robert Grisso is extension agricultural engineer at the University of Nebraska, Lincoln. Their study was conducted in cooperation with Dr. Robert Shearman of the University of Nebraska.

Manhattan II helps smooth out the roughs at Inverness

INVERNESS CLUB, TOLEDO – Superintendent Tom Walker chooses Manhattan II to overseed roughs at this prestigious club because of its wear resistance, quick establishment, dark green color and drought and disease tolerance. But Tom finds Manhattan II's big plus is *density.* Manhattan II actually produces more leaves per plant, an economy sometimes overlooked.

This increased basal tillering, coupled with Manhattan II's lower crown help 'heal' shallow divots by spreading laterally. This is why Manhattan II is used to overseed the range tees at Inverness, too.

Manhattan II was developed to take the abuses hard use areas demand, and look good while doing so. Give it a divot. Rough it up a bit. Manhattan II can take it. Just ask Tom Walker at Inverness Club.

Turf Merchants
33390 Tangent Loop, Tangent, OR 97389
Outside Oregon 800-421-1735
503-926-8649/FAX 503-926-4435

Manhattan II

Turf-Seed, Inc.
PO Box 250, Hubbard, OR 97032
800-247-6910/TWX 510-590-0957
503-981-9571/FAX 503-981-5626

Circle No. 162 on Reader Inquiry Card

Reroute roots and the ugly side of yo

Introducing Typar® Biobarrier™ root control system.

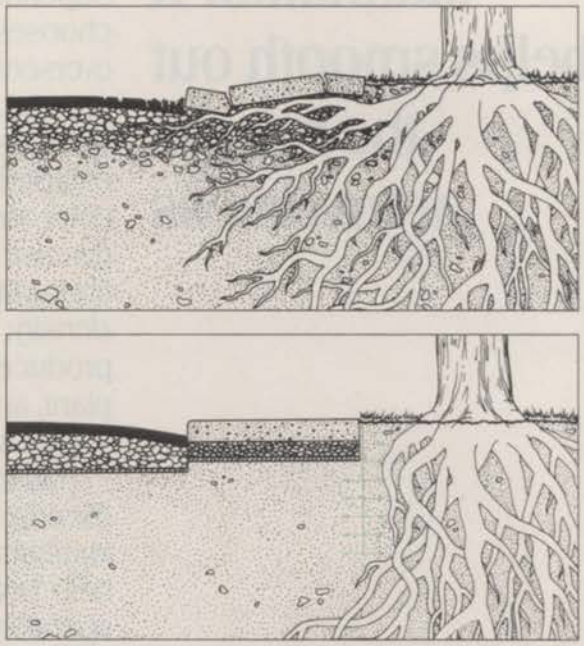
Give unsightly roots a new direction in life. Down. With new Biobarrier, the advanced root control system that sends your maintenance costs in the same direction.

Biobarrier combines two of the most effective, longest-lasting elements in root control. One is Treflan®, one of the most proven herbicides in the country, featuring new controlled-release pellet technology. The other is Typar® fabric, made with rugged polypropylene geotextile that's porous enough to let air and water through but holds the Treflan pellets in place.

Together, they reroute roots without harming your trees and plants. And preserve the beauty of your landscaped areas — golf greens, cart paths, sidewalks, curbs, walkways, parking lots, swimming pools, gardens and others — for years to come.

Forget roots for 15 years.

Underground, Biobarrier sets up a solid rootproof zone that spans one to two inches on each side of the fabric. That's the Treflan controlled-release vapor zone. A zone so powerful, it repels roots at a controlled rate for 15 years or more.



Top Without Biobarrier, tree roots penetrate paved surface and aggregate base, causing unsightly cracking and heaving.

Bottom With Biobarrier, a protective zone of Treflan vapor reroutes roots downward without harming roots or tree.

Forget extra labor.

Without Biobarrier, you're spending plenty of time and labor to trench, trim roots and replace damaged landscaping. But with Biobarrier, you'll only do the job once every 15 years—trim roots, replace damaged cart paths and install Biobarrier.

By rerouting roots downward, Biobarrier protects your golf greens, cart paths, tennis

tame
ur landscape.

courts, swimming pools and other recreational areas from unsightly roots. And helps keep your reputation in good standing among your customers.

Easy on plants and landscaping.

Unlike other control methods, Biobarrier won't harm trees or nearby landscaping. It doesn't kill roots, it just reroutes them away from your golf, recreational or landscaped areas.

Treflan's active ingredient is biodegradable. It cannot be taken up by plant systems. And it stays put without leaching out to keep rerouting roots for 15 years or longer.

Easy to install.

The Typar fabric in Biobarrier is flexible to make installation simple. Just install vertically along your golf, recreational or landscaped areas where tree roots threaten to bring out the ugly side of your landscape.

Call toll-free.

For the complete story on Biobarrier, see your Elanco representative. Or send for a free technical brochure from Elanco Products Company, Lilly Corporate Center, Dept. EM-455, Indianapolis, IN 46285, U.S.A. Or call toll-free: **1-800-352-6776.**

TYPAR® Biobarrier™ T.M.
Root Control System

Typar Biobarrier is jointly marketed by Reemay, Inc., a member of The InterTech Group, Inc., and Elanco Products Company, a division of Eli Lilly and Company.
Treflan® — (trifluralin, Elanco)

REEMAY
a member of The InterTech Group, Inc.

ELANCO

Circle No. 112 on Reader Inquiry Card

The Polo Trace Course in Florida involved 70 to 75 acres of hydroseeding. Bahiagrass and perennial ryegrasses were used in the roughs and bentgrass on the greens.

A COMPATIBLE PRACTICE

Hydroseeding is becoming more popular with superintendents because it offers even, precise seed delivery and fast green-up.

by Robert Stinson, the Finn Corp.

At a time when more people seek to participate in sports activities, golf occupies a unique place in the sporting world because of the challenges within the game that remain throughout the course of a player's life. You can play to improve a previous score on a certain course or hole, or to beat a single opponent or a group of opponents in a tournament.

Perhaps this is why the number of golfers grows annually in this country and around the globe. In 1988, more than 200 new golf courses were finished and another 300 under construction were due for completion in 1989. Until the year 2000, an average of 350 courses a year will be needed to meet the golfer demand.

More than 23,400,000 people golf in the United States, and the number is growing daily. Because that number is so high, maintaining present courses is as important as building new ones.

Individual design is one of the challenging aspects of playing golf. Each course has unique features that enhance the skills required to play a good round. For example, the Indianwood Golf and Country Club course in Lake Orion, Mich., is built in the links style common to inland Scotland. Course superintendent Mark Jackson says the new course has the highest slope rating of any course in Michigan and, thus, is the most difficult to play.

Indianwood's links style of terrain made hydroseeding the most appropriate seeding method to use on the banks, hills, mounds and slopes. The mounds are very sandy and it was impossible to drive or work on them without damaging the seedbed preparation.

As with some other courses, the greens were planted by the two-step method. The seed was first applied and then fiber mulch was sprayed on both as a seed cover and to hold moisture for faster growth.

One-step seeding

The one-step method of applying seed, fertilizer and fiber mulch at the same time was used in the other hydroseeded areas. Jackson used the Finn HydroSeeder, a useful maintenance tool for touch-up, watering and re-fertilization as needed.

Today many courses are being built as parts of large residential developments. The Eagle Landing Country Club near Atlanta is the third such development with which course superintendent Dave Gardner has been associated.

While the seeding of the first two developments was subcontracted, a decision was made during construction of the Eagle Landing development to purchase a HydroSeeder for increased efficiency and flexibility in performing various tasks. According to Gardner, in addition to using the HydroSeeder during the actual course construction, it is used to vegetate roadsides, establish home lawns, water shrubs and trees and to establish or maintain turf as required in a large acreage development.

Public course boom

In addition to the private courses under construction, many public courses are being built. Many contractors new to course construction have become involved because of existing opportunities.

Steve Turner of Evergreen Lawn Care in Bowling Green, Ky., was still relatively new to hydroseeding when

Make this the last time you spend time changing nozzles.

Upgrade to Quick TeeJet®.

Ever notice how the little things that shouldn't interfere with getting our work done are often the things that throw us off schedule?

It's time to make sure that changing, replacing and cleaning spray tips never eats up a morning again.

Now, an easy-to-use checklist shows you how easy it is to order and install the Quick TeeJet System.

With Quick TeeJet System all it takes is a flick of the wrist to change spray tips. Pop in a new tip, give the nozzle a quarter turn and the tip is locked, aligned and ready to go. In no time at all.

The optional Chem Saver™ Diaphragm Check Valve saves money by saving chemicals. It eliminates nozzle drips when you shut down the system.

Get the brochure. Eliminate the problem.

TeeJet®

No better way to spray today's chemicals.

Spraying Systems Co. North Ave., Wheaton, IL 60188

Circle No. 155 on Reader Inquiry Card

Complete and return this coupon for the guide to ordering and installing the Quick TeeJet System on your sprayer. **LM-3**

Name _____

Address _____

City _____ State _____ Zip _____

Mail to: Spraying Systems Co., Agricultural Division, North Ave., Wheaton, IL 60188

he began to work on the Hartland Municipal Golf Course, using his newly-acquired HydroSeeder. Hartland is a centerpiece development for the Bowling Green community and will include a new convention center and upscale private homes within and around the public course.

Each of the greens at Hartland was constructed to be approximately 8,500 square feet. The bentgrass seed was extremely small; Turner did not see how a mechanical seeder could have been calibrated to accurately seed at the 14 pounds-per-green rate.

Benefits noted

Turner employed a HydroSeeder with one 800-gallon tankload of seed and water with a mulch tracer to do each green. By hydroseeding the greens, he was able to do the job without introducing any foreign seed material.

In the process of doing the course, Turner discovered a number of the benefits of hydroseeding. He was able to do a more precise job in applying material around cart paths and other obstructions with minimal clean up. His labor, as opposed to other seeding and mulching methods, was reduced significantly.

Turner now "loves the hydroseeding process" and will be seeking to do more golf courses in the future.

Golf course designers and construction personnel in the United States are renowned for their expertise and are now doing projects throughout the world. An example is the Golf Course Barbaroux in Brignoles, a Pete Dye-designed private membership course in the south of France.

John Alford, a construction superintendent on a number of Dye courses in the southeastern U.S., headed the construction team at Barbaroux.

One of the important tools that Alford wanted for the job in France was a HydroSeeder, a machine that he had used on each of his previous courses. John liked the machine because of the ease with which the job could be done.

No washout worry

"Once the ground has been prepared, you can do the work and not worry. It will be stabilized and you should not have nearly as much concern about washout," says Alford.

The French workers were also impressed with the machine, calling it "the elephant" due to its appearance and work capacity.

The HydroSeeder remains at the course, filled with water as a member of the Barbaroux Volunteer Fire Department, since the terrain of the area dictates that larger fire-fighting tanks would not be practical.

Southern Hydro Turf, Inc., of West Palm Beach, Fla., has done the seeding for many courses. They are working on the Polo Trace course, which will involve 70 to 75 acres of hydroseeding. Argentine bahia and perennial ryegrasses are being used in the roughs and bentgrass will be used on the greens.

Hydroseeded greens can be playable in as few as 60 days.

Southern Hydro Turf's Terry Wilson has reported that greens on earlier such projects were playable in as few as 60 days, an important consideration with the growing use of established courses, which need constant maintenance.

Touching up areas

In addition to the playing surface, many areas—such as cart paths—require a continuous program to maintain the desired condition. A tower gun or remote hose method of hydroseed application makes it very practical to reseed or touch-up all areas during the growing season.

Throughout all phases of golf course construction and maintenance, a hydroseeding is a most valuable asset for efficient landscape management. In addition to the obvious benefits of lead time and effort required for a project, the improved playing surface and aesthetic quality of the surroundings add significantly to the total enjoyment of a round of golf. **LM**

In addition to the playing surface, many areas—such as cart paths—require continuous management to maintain the desired condition. Using a tower gun or remote hose method of hydro-seeding makes it easy.

The NEW Model 3500.

The most advanced 35-HP-class all-hydraulic trencher available. It's easy to use. Simple to maintain. Dependable. And won't fade in the stretch.

The NEW 3500: You've never had it so easy.

Take command easily.

Color-coded controls are shaped according to function, positioned right where you feel they should be.

Take a new look at all-hydraulic trenching. It's never been easier than with the new 3500. It's so advanced, it's actually simple. Simple to operate, simple to maintain, and easy to be productive.

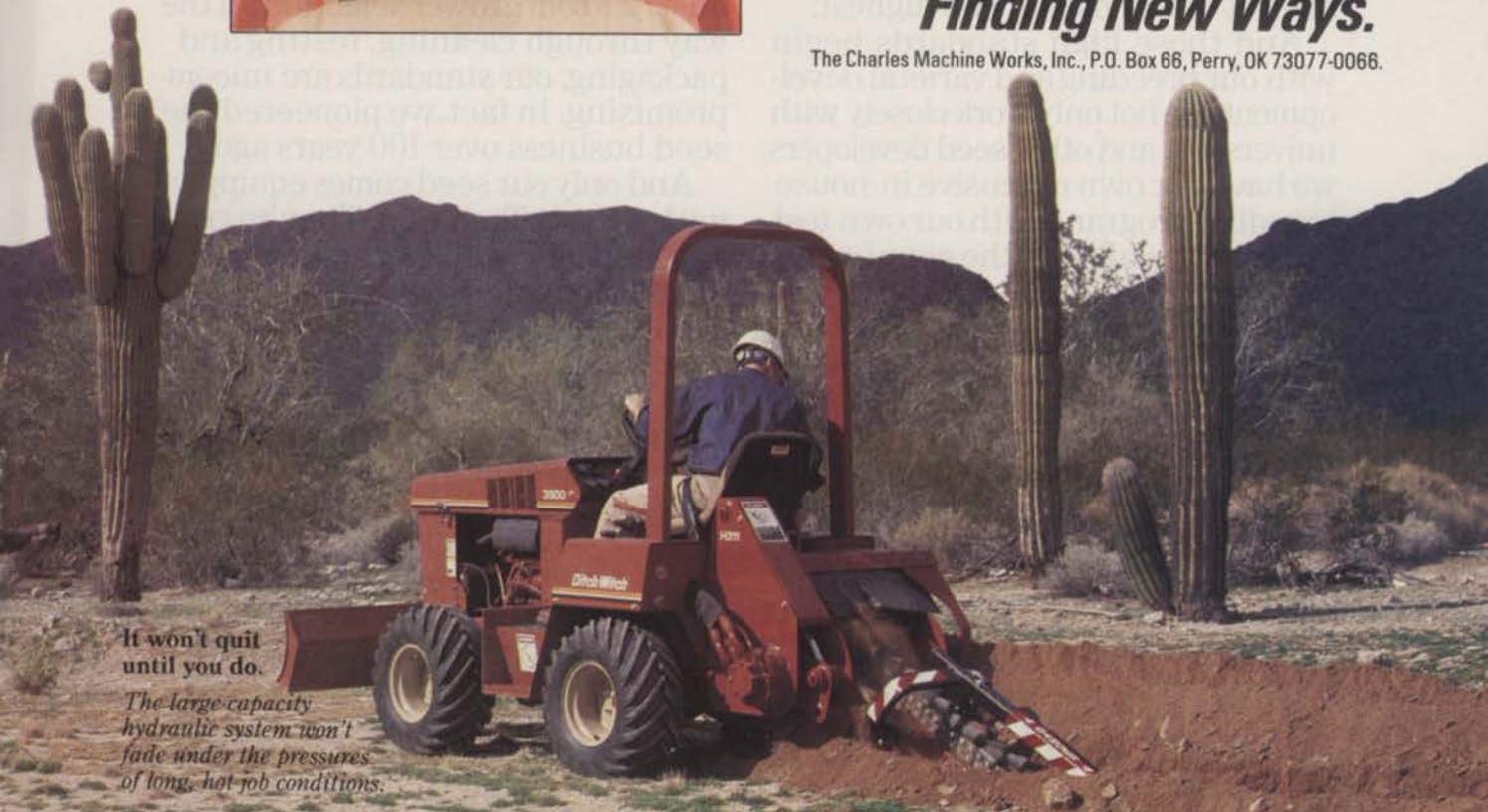
The 3500 is the most advanced trencher in its class. With easy-to-use controls. Innovative, cool-running hydraulics. A powerful, efficient digging chain drive. And absolute minimum daily maintenance.

See for yourself! Call TODAY for free, detailed information about the new 3500 trencher. Call TOLL-FREE, (800) 654-6481.

Ditch Witch®

Finding New Ways.

The Charles Machine Works, Inc., P.O. Box 66, Perry, OK 73077-0066.



It won't quit until you do.

The large-capacity hydraulic system won't fade under the pressures of long, hot job conditions.

Circle No. 109 on Reader Inquiry Card

We offer more than 10 exclusive varieties of grass seed. But only one color.

At Scott we may offer a lot of exclusive seed varieties. But we have only one set of standards. The highest.

And those high standards begin with our breeding and varietal development. We not only work closely with universities and other seed developers, we have our own extensive in-house breeding program, with our own testing facilities all over the country.

The result? Seed to meet any requirement. Exclusive varieties like our Coventry, Abbey, Bristol and Victa Kentucky bluegrasses; Accolade, Caravelle, Loretta, Applause and Ovation perennial ryegrasses; Banner Chewings fescue; and Chesapeake and Aquaro tall fescues.

But seed development is only part of the story. We have the most stringent requirements and controls for clean seed in the industry. From grower selection all the way through cleaning, testing and packaging, our standards are uncompromising. In fact, we pioneered the seed business over 100 years ago.

And only our seed comes equipped with a Scott Tech Rep. They're true agronomists, who can make recommendations and develop complete seeding and fertility programs to fit your specific needs and problems.

Of course, we still aren't content. We're constantly working harder to develop even better seed varieties.

Although you can rest assured, we're going to stick with the same old color.

Scotts ProTurf.

COVENTRY • Abbey • Bristol • VICTA • Accolade • Caravelle
Loretta • Applause • Ovation • Banner • Chesapeake • Aquaro

© 1989 O.M. Scott and Sons.

Circle No. 150 on Reader Inquiry Card

Many landscapers are planning to cash in on the nightlighting market, which is expected to grow significantly.

BY THE LIGHT

Landscapers on the cutting edge of the industry are beginning to offer nightlighting installation as a viable add-on service. Golf course superintendents and park managers are also taking advantage of the trend toward 24-hour beauty.

by Jerry Roche, executive editor

Using "the light...of the silvery moon" to illuminate landscapes sometimes just isn't good enough.

For stunning, you can't beat a well-lit landscape at night. For secure, you might consider installing an intruder alarm system—but nightlighting can help. For safe, there's nothing like having a well-illuminated driveway and sidewalk.

These, then, are the main reasons to sell nightlighting systems to landscape clients—whether you're a golf course superintendent looking to spruce up a clubhouse area, a contractor looking to make a little extra cash on your next residental installation, or a park superintendent looking to minimize vandalism.

The trend toward night-lit landscapes has captured the fancy of homeowners and facility managers in the extreme South and Northeast. If lighting follows other landscape trends, it will soon be popular from sea to shining sea.

Lighting boom

"There's a tremendous excitement for nightlighting going on throughout the country," notes Larry Powers, president of Genlyte, Inc., Littlestown, Pa. "There's a big market for high-end residences, hotels, restaurants and all types of retail establishments, particularly stand-alone establishments. We see a real explosion in the coming years.

"I see a tremendous opportunity for a contractor. In many areas of the country, they would have a tremendous surge of business. We think it can be very profitable, too. One of our distributors in northern New Jersey says that they have never sold a landscape lighting job under $1,500."

Landscape lighting, a $120 million a year business at the wholesale level, is projected to grow 10 to 15 percent per year over the next five years.

"This is an extremely hot area now," agrees Rick Wiedemer of Hinckley Lighting, Cleveland, Ohio. "People are pouring thousands of dollars into their landscapes. But you can't see the expensive landscaping unless you light it."

The art as science

Good landscape lighting is as much art as science. Few hard-and-fast rules apply, but it employs certain funda-

A reliable old friend.

Three-Way bentgrass formulation also available.

Always read and follow instructions on package before using any chemical product.

For outstanding and economical broad-spectrum weed control, one product stands alone. LESCO Three-Way Selective Herbicide.

The combined efficiency of 2,4-D, MCPP and dicamba stops more than 30 weeds with a single application. Including tough problems like ground ivy and spurge.

And just as important is the cost effectiveness of Three-Way. Why pay more for herbicides that do less?

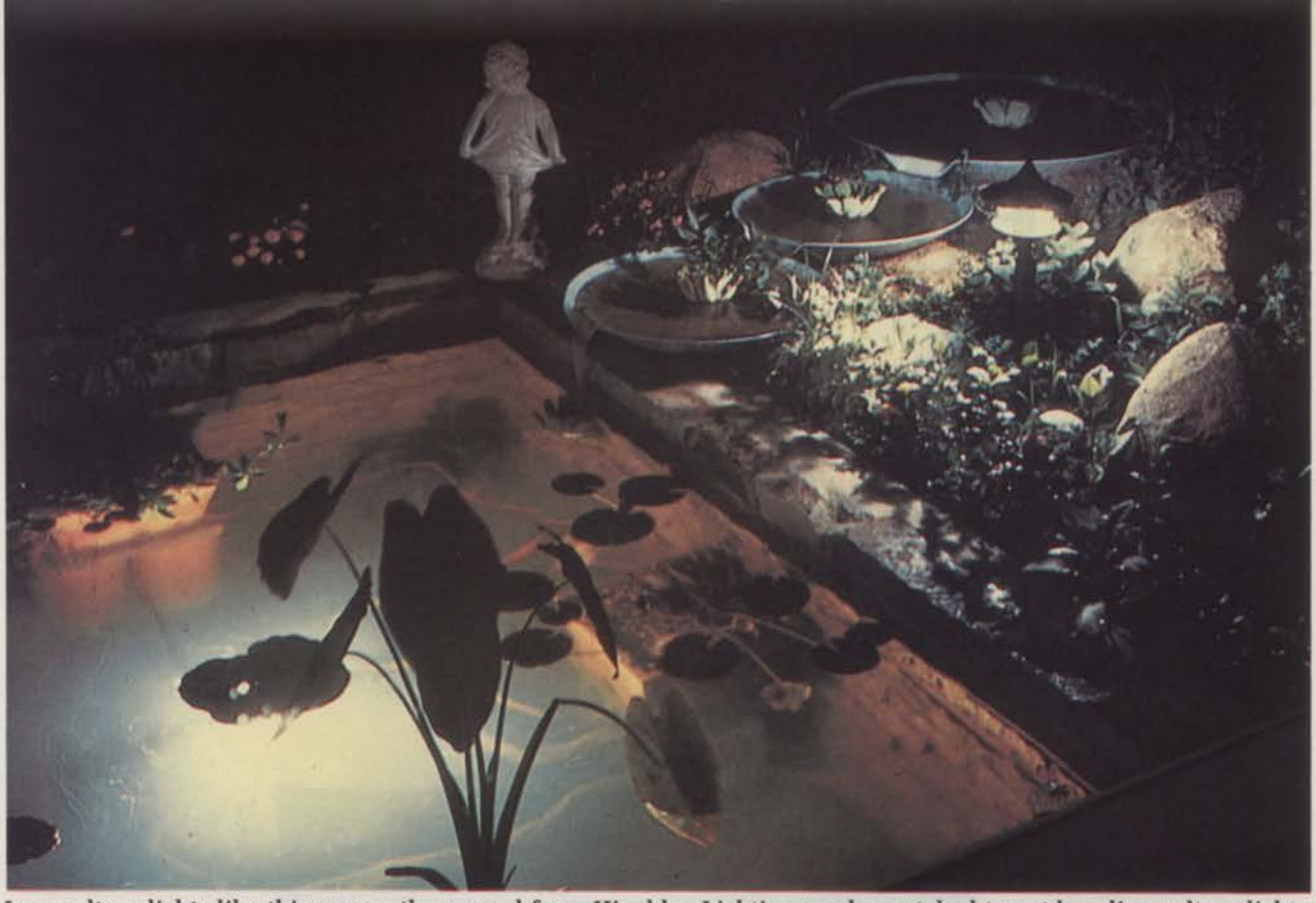
Outstanding weed control at an economical cost. No wonder LESCO Three-Way Selective Herbicide is still the first choice of professional turfgrass managers.

It's nice to know you can rely on an old friend. Order today.

LESCO **(800) 825-3726**

LESCO, Inc., 20005 Lake Road, Rocky River, Ohio 44116 • (216) 333-9250

Circle No. 130 on Reader Inquiry Card



Low-voltage lights like this one on the ground from Hinckley Lighting can be matched to outdoor line-voltage lights installed on residential properties.

mentals. Knowing the basics will help the job go easier, minimize callbacks and more fully satisfy the customer.

"The average landscape contractor won't know about the aesthetics of landscape lighting unless he or she goes to some seminars or places where somebody teaches good lighting techniques," Powers says. "The American Lighting Association puts on a series of lighting seminars throughout the United States on techniques of landscape lighting."

Neil Mitchell of Major Electric Supply, Pawtucket, R.I., organized a seminar in September for landscape architects and contractors and electricians. Despite terrible weather, a standing-room-only crowd showed up.

"Selling landscape lighting is as easy as taking candy from a baby," Mitchell believes. "All the contractor has to do is open up his yap. If it's installed at the time the landscape is being installed, it's very easy and economical."

Mitchell says that contractors can charge homeowners $100 to $200 per fixture and make a good profit.

"We've found that the average residential lighting sale is $3,000 to $5,000," notes Wiedemer. "On big residential jobs, we think that it's probably best to follow up a year later with lighting. If the owner is tapped out after the landscape construction, the lighting might come into play even two to three years down the road."

'Selling landscape lighting is as easy as taking candy from a baby.'

Neil Mitchell
Major Elec. Supply
Pawtucket, R.I.

Lighting by design

When selling lighting, the design begins by determining the client's needs. Since there are so many fixtures on the market, the first step is to gather information and formulate a plan based on specific requirements. Make sure to ask:

- What lighting effect does the client expect?
- Does the client entertain often?
- Where are the guests usually located?
- Where should the lighting system be controlled?
- Is security a primary concern?
- Which key landscape features should be used as focal points?
- What tone or feeling do you want to achieve?

Next you should define the budget and identify the lighting manufacturers that fit your needs. Finally, select and place specific lighting fixtures.

"There are a lot of different grades of landscape lighting," notes Powers. "Most people aren't very happy with the very low-end products once they put them in. If I were a contractor installing a job, I'd want to make sure I had a quality product with some warrantees. Dogs wet on them, sprinkler systems sprinkle on them and they take every kind of outdoor abuse that there is."

The right light

Fixture selection is a critical decision. Selection is made by considering economics, positioning, shielding and

THE MAZDA WARRANTY: DESIGNED TO LAST THE LIFE OF YOUR FLEET.

KEEPING COSTS DOWN—IT'S CRITICAL TO YOUR SUCCESS AS A FLEET OPERATOR. THAT'S WHY WE GIVE YOU THE MAZDA WARRANTY. BECAUSE EVEN WHEN YOU BUY A TRUCK AS RELIABLE AS OURS, THE FEWER REPAIRS YOU PAY FOR, THE BETTER YOUR BOTTOM LINE.

EVERY MAZDA TRUCK COMES WITH A 36-MONTH/ 50,000-MILE WARRANTY—*STANDARD*. WHAT IT COVERS WOULD FILL THIS PAGE. WHAT IT DOESN'T COVER IS ROUTINE MAINTENANCE, PARTS SUBJECT TO NORMAL WEAR AND REPLACEMENT, AND ACCESSORIES COVERED BY THEIR OWN WARRANTY. THAT'S ALL. AND THERE'S *NEVER* A DEDUCTIBLE.

SO, CALL OUR NATIONAL FLEET SALES OFFICE AT (714) 727-6453. WE'LL SEND YOU COMPLETE INFORMATION ON AMERICA'S MOST TROUBLE-FREE COMPACT TRUCK,* INCLUDING A QUICK REFERENCE GUIDE TO THE MAZDA WARRANTY. THEN YOU CAN READ ALL ABOUT OUR TRUCKS, AND THE BEST BASIC WARRANTY IN THE COMPACT TRUCK BUSINESS.

THE MAZDA WARRANTY. IT COSTS NOTHING AND COVERS JUST ABOUT EVERYTHING. AND IF YOU RUN YOUR FLEET LIKE MOST, IT WILL STILL BE IN EFFECT WHEN IT'S TIME TO TURN YOUR TRUCKS OVER. YOU MIGHT JUST CALL IT THE WARRANTY OF A LIFETIME.

mazda

IT JUST FEELS RIGHT.™

*J.D. Power and Associates 1989 Compact Truck Initial Quality Survey℠

© 1989 Mazda Motor of America, Inc.

Circle No. 132 on Reader Inquiry Card

In No Time At All

Outfront deck design lets you reach hard-to-mow areas that belly-mount mowers can't get to.

Before the sun goes down, you too can become an expert. Grasshopper's instinctively natural controls, high productivity and durability make total mowing efficiency easy to learn.

No wheels to turn. No gears to shift. No pedals to push. Grasshopper puts total command of mowing in the palm of your hand. Instinctively natural control of steering, speed, braking, turns and forward/reverse motion is placed at your fingertips. For added comfort and safety, the levers return to neutral automatically.

Operation is virtually fatigue-free because you sit comfortably in a high-back suspension seat that supports your body in a natural position. No humps, controls or levers to straddle, either!

Zero-turning-radius and outfront deck design further simplify mowing by providing superior visibility, trim capability and maneuverability. The Grasshopper dealer network offers strong support and a versatile lineup that includes six models, 11 to 21 hp, deck options from 35" to 72" and year-round attachments.

For 20 years Grasshopper has advanced outfront zero-turn-radius mower technology so you can become more efficient "in no time at all."

The Ultimate *Time-Cutter*

The Grasshopper Company
One Grasshopper Trail
P.O. Box 637, Moundridge, KS 67107

GRASSHOPPER
OUTFRONT SINCE 1970

Telephone 316-345-8621
FAX 316-345-2301

GRASSHOPPER®

YOUR NEXT MOWER

GRA-2-90

©1990, The Grasshopper Company

Circle No. 122 on Reader Inquiry Card

A CRIME-STOPPER

Adequate nightlighting can deter crime, according to the National Lighting Bureau (NLB). A dramatic example was provided in a case history submitted to the organization's National Lighting Awards Program.

After two female employees of the Bellevue (Wash.) *Journal-American* were accosted in the daily newspaper's parking lot in 1982 and again in 1983, new lighting was installed. No further incidents have occurred.

Somewhat ironically, the new lighting—which provides 21 percent more light—costs 24 percent less per year to operate and maintain.

Journal-American facilities manager Robert F. Phillips sought Maurice W. Dick, service manager for Holmes Electrical Contractors of Renton, Wash. Dick recommended high-pressure sodium lighting to replace incandescent lights.

Annual energy consumption of the new system was $840. The cost of replacement lamps, lamp replacement labor and ballast replacement amounted to $505 per year, bringing the system's total operation and maintenance costs to $1,345 per year. Because the new system's 2.042 killowatt-hour connected load is 54 percent less than the original system's, utility costs were cut $454 per year.

In addition to the safety factor, Phillips says that several employees commented that the new lighting, with its distinctive "golden-white" color, made the buildings and landscape more attractive, linking them into a unified whole at night.

According to NLB executive director Richard H. Geissler, the *Journal-American* case "demonstrates the important difference between lighting management and lighting energy conservation."

More information about the benefits of lighting and specific techniques that can be applied to obtain them is available from the NLB. A free directory of the bureau's publications is available by writing the NLB, 2101 L St. NW, Suite 300, Washington, D.C. 20037; or calling (202) 457-8437. □

Your most valuable assets aren't always liquid.

For many weed control problems, the answer is not a solution. It's granular Team™ preemergence herbicide.

Team puts your weed control where it does the most good — the weed germination zone. There, it turns into a vapor and delivers a zone of protection that's very solid. So solid, it keeps out crabgrass, goosegrass and many other problem weeds all season long.

That keeps your reputation solid, too. With Team, your golf or lawn care customers will see fewer weeds — and more beautiful turfgrass.

But it's not just Team's tough weed control that keeps customers happy. Many of them also prefer its gentle activity to turfgrass. Plus its easy, precise application. Team granules stay where you put them and won't leach out, even in heavy rainfall. And you can either apply Team by itself or on fertilizer available from leading formulators.

Find out why your most valuable asset could be granular Team. Call your nearest DowElanco distributor or for technical assistance, call toll-free: **1-800-352-6776.**

DowElanco
4040 Vincennes Circle — Suite 400
Indianapolis, IN 46268 U.S.A.

Team™ — (benefin+trifluralin, DowElanco)
Refer to the Team label for complete directions.

Circle No. 113 on Reader Inquiry Card

LOW-VOLTAGE, NOT LOW-PROFILE

More and more, experts are agreeing that low-voltage landscape lighting is the thing to sell to residential customers, rather than what they call "line-voltage" lighting systems.

Low-voltage systems are light, movable and safe. They employ a transformer to reduce voltage from line-level (110- to 120-volt house power) to low-voltage (12-volt, equivalent to an automobile battery) and direct-bury cable. Line-level equipment, on the other hand, requires junction boxes and underground conduit. It is extremely permanent, compared to its low-voltage cousin.

"Low-voltage systems are also very safe," notes Art Crisfield of Hinckley Lighting in Cleveland, Ohio. "If you run over the power lines with a mower or snip them with pruners, you won't blow your teeth out."

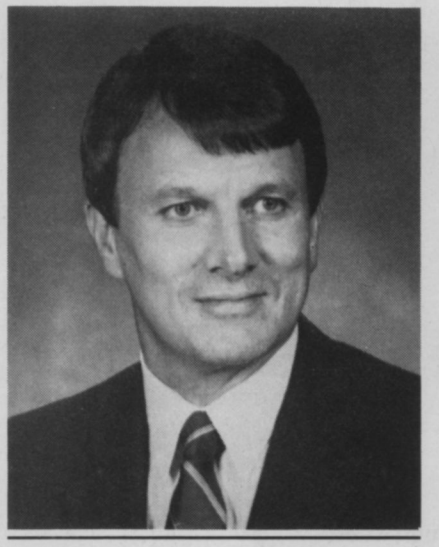
"They also have freedom of movement," notes Ken Nicholas, Crisfield's co-worker at Hinckley Lighting. "We make 6-, 12-, 18- and 24-inch stems on spikes. You just stick them into the ground where you want them. If you want to move them, it's extremely easy. You just pull them out."

Neil Mitchell of Major Electric Supply in Pawtucket, R.I. notes four advantages of low-voltage lighting:

- Generally speaking, the fixtures themselves cost less. Though cheap plastic models can be bought at discount department stores, lighting manufacturers and electric supply houses have top-of-the-line metal products priced beginning at $25 each, which is still relatively inexpensive compared to line-level equipment.
- Installation is considerably less costly. In many cases, digging is not really necessary. For instance, wiring for lights in ornamental beds can be easily buried under mulch. Licensed electricians are required to install the line-voltage systems; no license is needed for low-voltage installation.
- Systems are safer for children and pets. No "blown teeth," as Crisfield says.
- Though the bulbs are low-voltage and low-wattage, they produce two to three times the amount of lumens as their line-voltage equivalents.

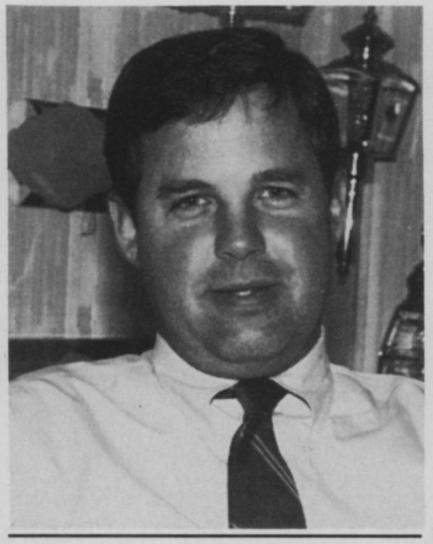
—*Jerry Roche* □

Ken Nicholas (l) and Art Chrisfield of Hinckley Lighting say low voltage systems are economical and safe.



'There's tremendous excitement for nightlighting now.'

—*Larry Powers*
Genlyte, Inc.



'You can't see the expensive landscape unless you light it.'

—*Rick Wiedemer*
Hinckley Lighting

"dayform" (what the fixture looks like in daylight).

Power sources include line-level (120-volt) and low-voltage (12-volt). Each has its advantages. Types of lamp sources are incandescent (including quartz/tungsten and halogen), metal halide, mercury vapor and high-pressure sodium. Colored lenses, no matter what type of source, should be used sparingly.

Placement, of course, is the key to a beautiful nightscape. Positioning fixtures in relation to the object to be lighted can radically affect the finished job's mood and tone. The best way to determine the most desirable fixture placement, most experts agree, is trial and error at the job site.

Locating a spot very close to the object creates tremendous contrast, character and shadows. The further the light source from the object, the softer the gradations between high-spots of light and deep shadows.

As a sales tool

A final note to bear in mind. Observes Wiedemer: "When people go down the road at night and see these well-lit landscapes, they're going to ask who did the landscaping, not who did the lighting.

"The progressive, aggressive landscapers will recognize that this is an excellent add-on sale."

An instructional video tape produced by Genlyte can help landscape contractors acquaint themselves with the lighting design and installation market. It is available by writing P.O. Box 128, Littlestown, PA 17340 or calling (717) 359-7131.

To find out more about outdoor lighting, write or call the American Lighting Association, 435 N. Michigan Avenue, Chicago, IL 60611; (312) 644-0828. The ALA offers a 16-page, four-color brochure for $2. Landscape managers can also order bulk copies at 35 cents each with a minimum order of 250. **LM**

THE PRODUCTION MACHINE

"HIGH CAPACITY, ECONOMICAL, HIGH-FLOATATION"

TURF BLAZER 1040

That's how this machine has been designed! The mammoth 104" appetite affords you 31% higher capacity than a standard 72" unit. With a 60" mower out front and two hydraulically operated wings, we have eliminated the application of long, troublesome belts and assured you of picture perfect flotation over berms and undulations.

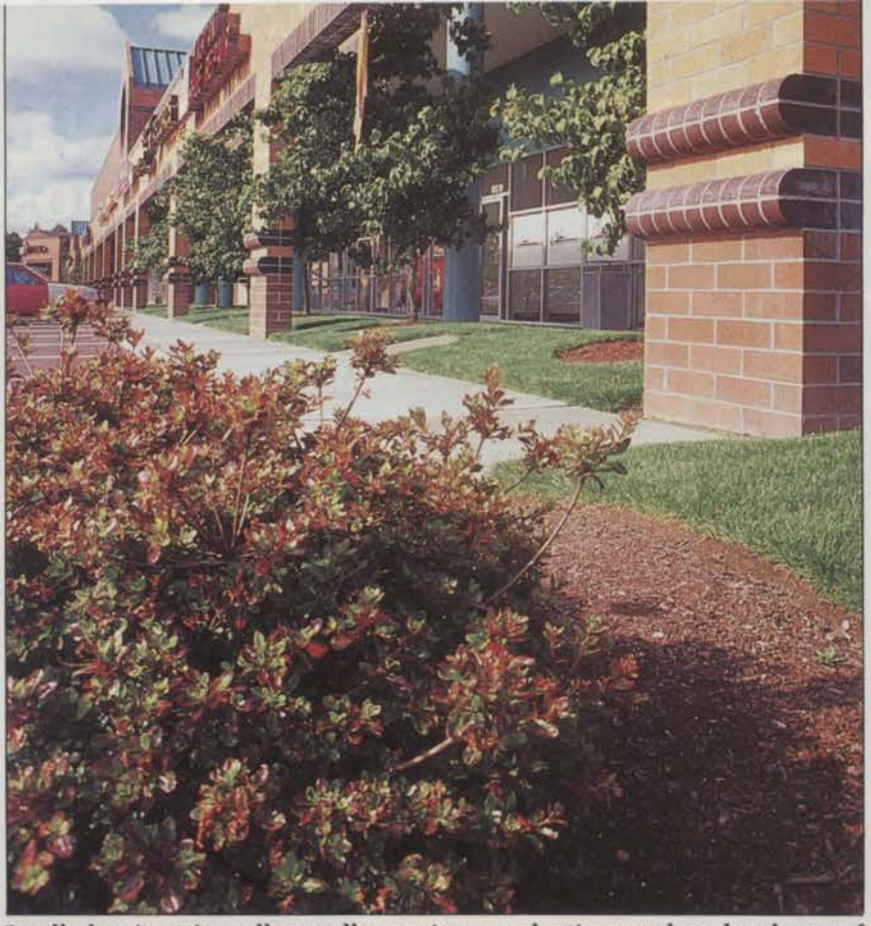
Add to this a field tested, 4-cylinder water-cooled, 40 HP diesel engine in conjunction with hydro-static transmission and you have a machine which will maximize your return on cost of acre cut.

Contact your local HOWARD PRICE distributor for a demonstration on your turf.

Circle No. 220 on Reader Inquiry Card

Manufactured by HOWARD PRICE TURF EQUIPMENT

18155 Edison Avenue
Chesterfield, Mo. 63005



Small plots in strip malls usually require a production rate based on hours of labor by task and a standard hourly rate for the piece of machinery used.

MATCHING BIDS WITH JOB COSTS

Northwest Landscape Industries has found that the best route to the land of profits is through efficient estimating and job-costing.

by Dick Landis

Landscape contractors know that accurate and profitable bid proposals are one of the keys to staying in business. Jim Wathey, vice president of Northwest Landscape Industries, Portland, Ore., believes the best way to make sure those numbers are valid is to integrate bidding and job costing.

Northwest feels its bidding process is what gives the company its competitive edge. Wathey's goal is a system that generates numbers at least 80 to 90 percent compatible between the bidding and job costing.

"From the beginning, we wanted to be able to compare bid estimates with actual costs as the job progresses and learn from our experience," he notes. "Our problem was matching the actual job costs to the level of detail we used when we put the bid together. One answer was to simplify the bid proposals."

Composite vs. standard

For years, Northwest compiled its production rates and tried to break them down by individual tasks for 700 to 800 maintenance accounts. "When we attempted to establish a production rate for a 21-inch mower, we had 70 route foremen sitting down at the end of a long, hot day figuring out how much time two or three guys spent mowing," Wathey explains. "The information just wasn't accurate, so we went to composite bids and used packaged production rates because they made more sense."

The composite rate is based on hours of labor by task and a standard hourly rate for the piece of machinery used. It is still difficult, however, to match bids to actuals for the 400 Portland and 300 Seattle lawn maintenance jobs which are 45 percent of Northwest's workload. That's because the company offers a full service package and charges a monthly rate.

'We bid the annuals like an interiorscaper would, with production schedules and man-hours based on how many people it will take to cover each season.'

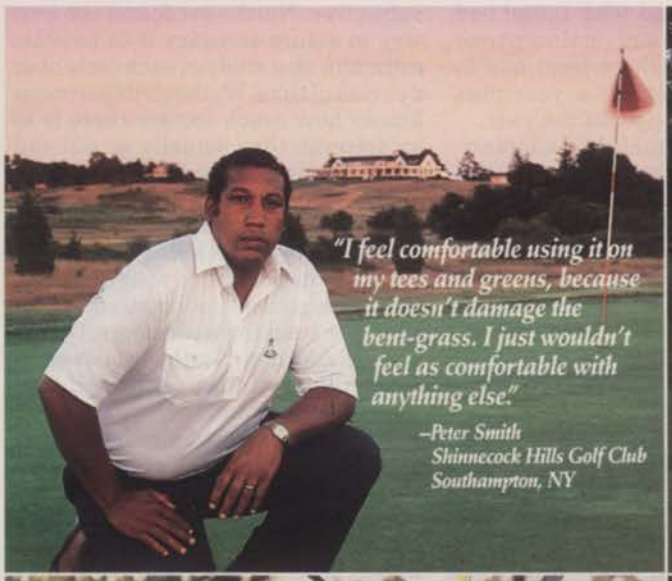
—Jim Wathey
Northwest Industries

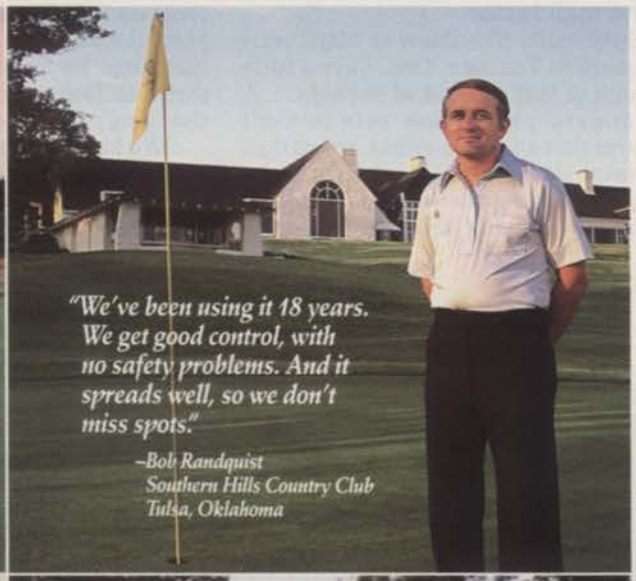
Northwest has to estimate the costs of all the maintenance activities, match them with the size of area to be maintained, determine the type of equipment to be used and consolidate the figures to come up with a lump sum for that job.

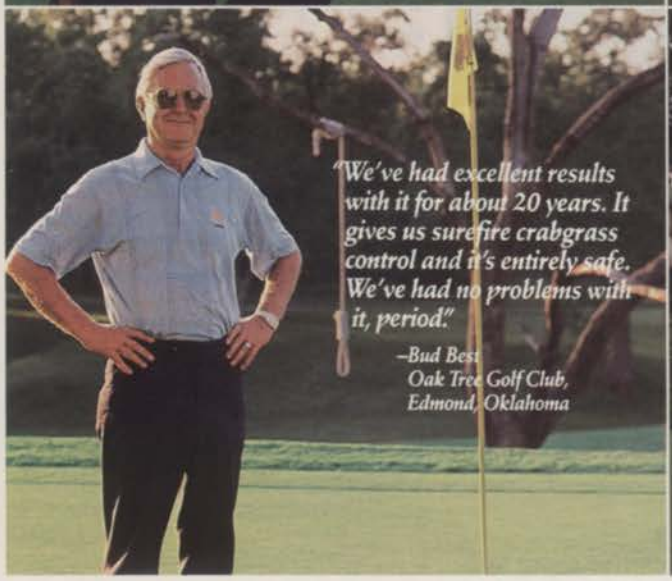
Business parks like the Nimbus Technology and Koll Business Centers in Beaverton, Ore., have very similar edging, string trimming and mowing requirements and are physically alike enough so that Northwest doesn't have to measure every square foot of turf. They cluster these accounts by number of areas, total square footage and the type of machine to be used.

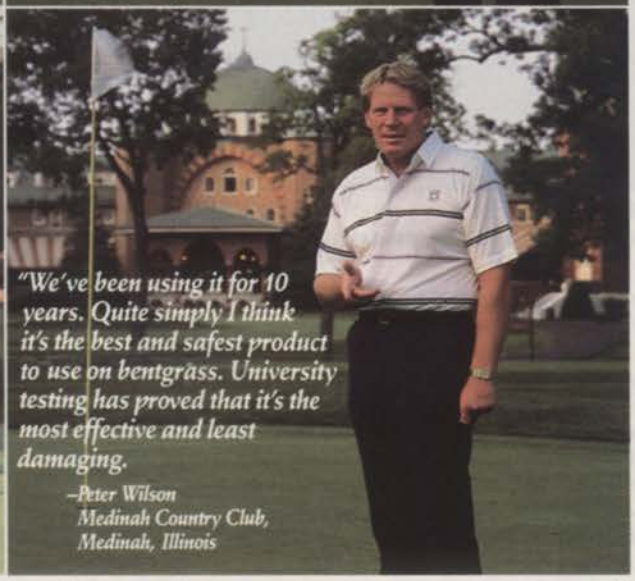
Standard production rates don't fit the wide open mowing areas at the Fujitsu America and Centerpointe properties. Here, Northwest uses more cost-efficient reel mowers so a different production rate is required. "If you've got wide open turf areas—25,000 to 30,000 square feet—you'll have a 30,000-square-foot production

Why Betasan is trusted most by the best.


"I feel comfortable using it on my tees and greens, because it doesn't damage the bent-grass. I just wouldn't feel as comfortable with anything else."
–Peter Smith
Shinnecock Hills Golf Club
Southampton, NY


"We've been using it 18 years. We get good control, with no safety problems. And it spreads well, so we don't miss spots."
–Bob Randquist
Southern Hills Country Club
Tulsa, Oklahoma


"We've had excellent results with it for about 20 years. It gives us surefire crabgrass control and it's entirely safe. We've had no problems with it, period."
–Bud Best
Oak Tree Golf Club,
Edmond, Oklahoma


"We've been using it for 10 years. Quite simply I think it's the best and safest product to use on bentgrass. University testing has proved that it's the most effective and least damaging.
–Peter Wilson
Medinah Country Club,
Medinah, Illinois

For over two decades an overwhelming majority of the country's top courses have chosen BETASAN® herbicide for their bentgrass greens, tees and fairways. That's because golf course superintendents know that BETASAN is the only crabgrass preemergent herbicide that's safe for all turf–including established bentgrass, bluegrass, fescue, perennial and annual rye, bermudagrass, Zoysia, bahia, centipede and St. Augustine.

Extensive tests have shown BETASAN to be excellent for poa annua control, too.

But don't just take our word for it; ask your colleagues at the country's top courses.

We are as confident in their answers as you can be in BETASAN.

Incidentally, it's available in both liquid and granular formulations to match any application need you may have.

For more information, contact your local supplier or call ICI Americas at 1-800-759-2500.

BETASAN

Trusted most by the best

ICI

BETASAN is also marketed professionally under the trade names Bensumec, Pre-San and Lescosan

Circle No. 125 on Reader Inquiry Card

rate," Wathey says.

The mall factor

"Strip malls like those at Martinazzi Square in Tualatin, Ore., have a little patch of turf in front of each door. A standard production rate doesn't cover that situation either, so we do a composite on those. Also, when you're bidding a new account, the risk is always higher because you don't know the routine. However, it almost always evens out."

Other landscapers actually cost each of the activities to reach an estimate; some even take it farther and cost the job by size of area and type of soil. Each step incorporates labor, material, supply costs and equipment as well as the costs to transport it to the job site, but Wathey says it isn't cost-effective to develop a bid at that level of detail.

On the other hand, a "packaged" production rate is a little simpler. For example, if a project had 45,000 square feet of turf broken down into 40,000 square feet of wide open lawns and 5,000 square feet of small lawns, Northwest would bid it at 6.5 hours per "mowing visit." The "mowing visit" would be broken down into 3.0 hours on large mowers for the wide open space; 1.5 hours using 21-inch mowers on the 5,000 square feet; 1.0 hour for edging, blowing and clean-up; 0.5 hour to police the site for litter and weeds; 0.5 hour in travel time.

Month by month

Since Northwest's maintenance contracts are set up as 12 equal monthly payments, the computer bid format is designed to do the man/hour splits by month automatically as part of the estimate.

Northwest also has service programs for annuals and irrigation that require separate bids. The annuals program is packaged with initial bed prep installation and maintenance that includes anywhere from one to three or four plantings a year plus changing pots throughout the year.

"We bid the annuals like an interiorscaper would, with production schedules and man-hours based on how many people it will take to cover each season," says Wathey. "Our first crunch is at the end of April. We have to be done by the end of June, which takes a lot of manpower in a short period of time. Afterwards we review the information to see how we came out. Generally, we're not off too much."

Business parks have very similar edging, weed eating and mower requirements, so it isn't necessary to measure every lineal foot of the turfed edge.

Reliable numbers

After getting the job, Northwest budgets man-hours by month, based on the type of work during that season. Wathey also developed a data collection system that yields better figures at the job cost end.

"The difficulty was in making sure employees kept track of meaningful numbers. We tried timecards and the accounts payable module of their mainframe software system, but the laborers just couldn't handle it. Now, I have the foremen fill out worksheets by the job, and the numbers are a lot more reliable."

Supervisors use the time sheet for each account to track travel time and time spent on the job. At the end of every month, they get a rundown of how many hours they used on that account, versus what they bid. "It always has to be adjusted and then averaged over the year to see if they are on target," acknowledges Wathey. "We then give them a year-to-date total so they can see how they did for the year."

Maintenance job costing is more subjective. Northwest found the best way to assure accuracy is to have its estimator do a study of each crew over a period of time. Wathey's department knows how much footage there is in an account; they actually go out and track the people working at that account. That way, they get an estimate based on experience.

Basically, Northwest uses turf square footage and bed square footage for measurement as opposed to, for example, tracking weed control in the beds. In addition, Northwest has a category that includes all the oddball things people want.

"If a customer wants ornamental pruning, we keep track of those hours extra," Wathey says. "You can spend a lot of time pruning roses. Then there's bark dusting and, once in a while, people want us to paint bike stands."

Fully computerized

The main office in Tigard, Ore., handles all the financial accounting, job costing and purchasing functions on a DEC mainframe computer. The Seattle branch handles its own bidding and estimating using an IBM-compatible computer and Lotus spreadsheets. Even though the estimating process is not automated in Portland, Wathey maintains compatibility by using the same system manually.

According to Wathey, the computer makes bid preparation and job costing much quicker, particularly when he is reconciling bids with the actual expenses. The spreadsheet is also more accurate. With a maintenance contract, there are a lot of exceptions based on the type of grounds and the type of work the customer wants done. Because of the way the spreadsheet is put together, it's hard to leave anything out of the bid.

The best way to assure accurate maintenance job costing is the study each crew over time.

"When we match the bid with actual costs, the information from the field is broken down by hours on the job," Wathey notes. "We also incorporate overhead into an hourly rate. We keep a record of how many chargeable production hours we have every year

We didn't just build a new professional ZTR mower.

We reinvented the wheel.

Simplicity is known for being on the cutting edge. So our new Professional line should surprise no one. It's equipped with our patented Hydro Steer™ — the first zero turning radius system with a steering wheel.

Hydro Steer gives you a greater sense of control. Maneuvering is more precise and comfortable. And with a foot-operated pedal to control both ground speed and forward/reverse, your hands never have to leave the wheel.

But if we said superior handling is the only thing our Professional mower has going for it, we'd be steering you wrong. It also has twin hydrostatic transmissions, a 16HP Briggs & Stratton Vanguard or 18-20HP Kohler Magnum engine, 46″ to 66″ mowing decks, and a durable, welded steel frame. Optional lever steering available.

You'll give your customers perfect cuts for years to come.

Take a turn for the better. The new Simplicity Professional line. Starting around $5,000.

Simplicity

Outdoor Power Equipment

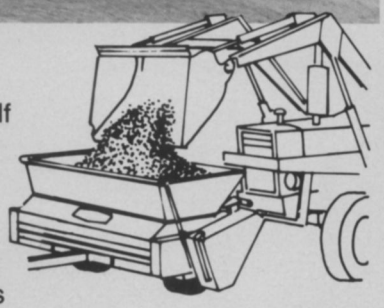
Simplicity Manufacturing, Inc.
Port Washington, WI 53074

© 1989 Simplicity Manufacturing, Inc.

Circle No. 292 on Reader Inquiry Card

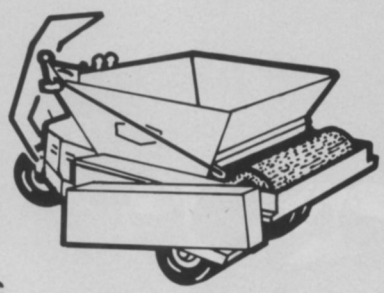
TURFCO METE-R-MATIC II
TOW-TYPE TOP DRESSER

Top dressing **levels existing turf** on athletic fields while stimulating growth and improving soil conditions. Repetitive top dressing **fills in the low spots** and also promotes the **decomposition of thatch.**



- Top dress 18 golf greens in under 6 hours
- Top dress an athletic field in under 2 hours
- 18.3 cubic feet hopper capacity
- Spreading width of 60"
- Top dress at up to 8 miles/hour
- Ground driven no engine to maintain

TURFCO also manufactures self-propelled and truckster-mounted **METE-R-MATIC TOP DRESSERS**



TURFCO MFG., INC.
3456 N. Washington Ave.
Minneapolis, MN 55412-2688

Ph. 612/588-0741
Telex 5106013762

TURFCO

Circle No. 160 on Reader Inquiry Card

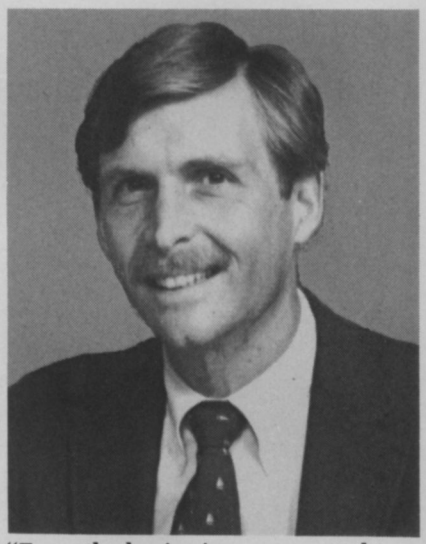
to figure out what kind of rate we need to charge to recover overhead and make a profit.

"Charges run 7, 10 and 12 percent based on the size of the account. The bigger the account, the less overhead."

Tracking material cost

Materials are kept track of separately. Every year Wathey develops an operating budget using historical records to determine square footage costs for materials. They don't keep track by account. It's all done at the fiscal budget level.

The materials management system is controlled by matching actual use against a budget prepared by supervisors when the contract is awarded. The exciting part is that the computer does all the calculations for them. "All I have to do is review it and see if it makes sense," Wathey says. "If a bid

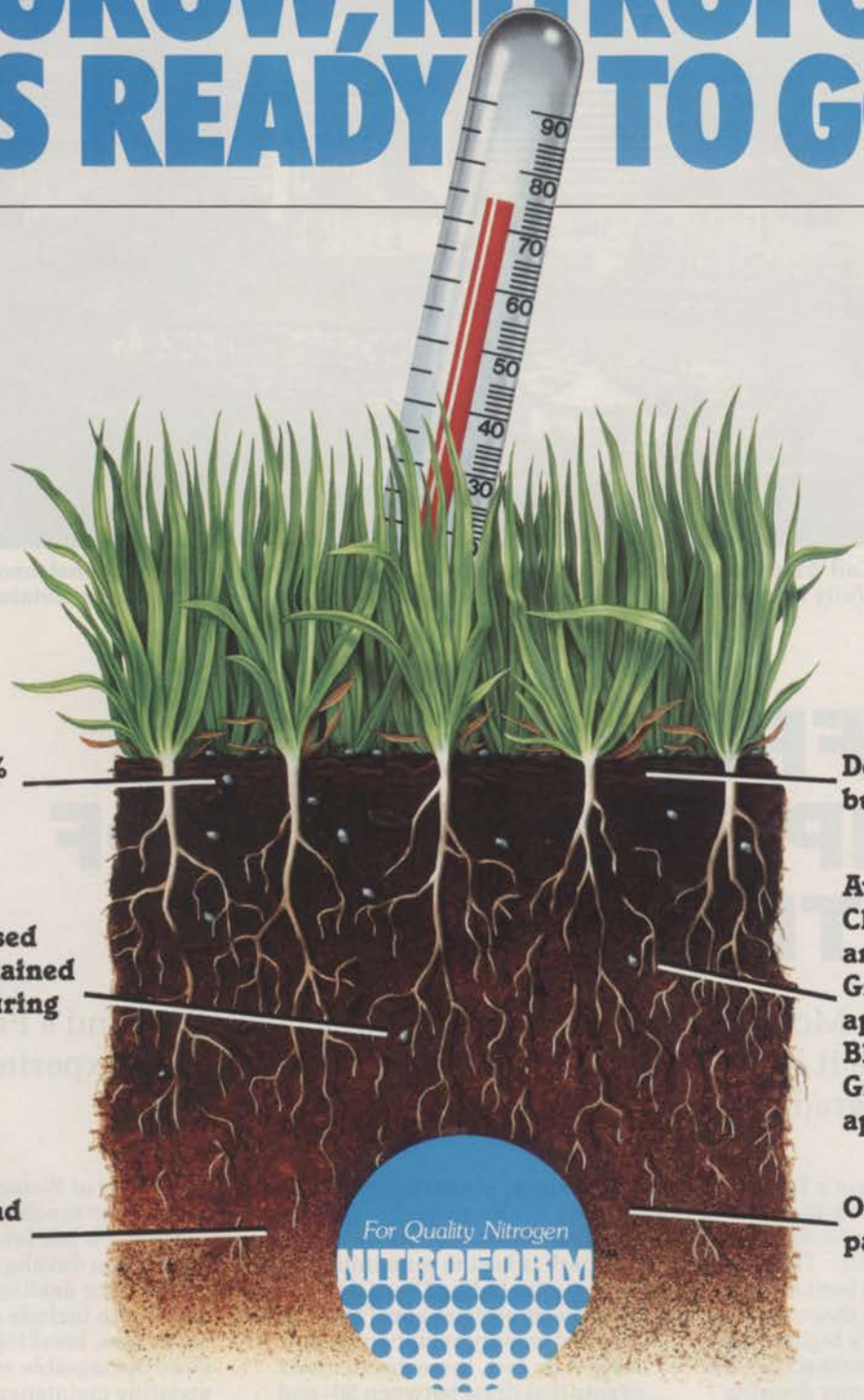


"From the beginning, we wanted to compare bid estimates with actual costs."

is way off, we go back to the customer with the numbers on a computer print-out."

Over the next year, Northwest will be converting the Dec Vax and Rainbow PCs in Portland to an IBM 386 compatible network. "When we needed a computer in Seattle, we went with an IBM compatible rather than continue to invest money in obsolete equipment. By using the computer system, composite rates and turf routes, and doing good follow-up evaluation, we've had excellent experience matching our actual costs to our budget figures. Now we want the whole system integrated so we can take advantage of MSDOS landscape programs as well as our Lotus and WordPerfect programs," Wathey concludes. **LM**

WHEN TURF IS READY TO GROW, NITROFORM® IS READY TO GO



Consistent 38% nitrogen

Nitrogen released slowly for sustained turf feeding during active growth periods

Nonburning and nonleaching

Decreased thatch build-up

Available in Blue Chip®, Gray Chip™ and new Blue Granular™ for dry application; Powder Blue® and Powder Gray™ for spray application.

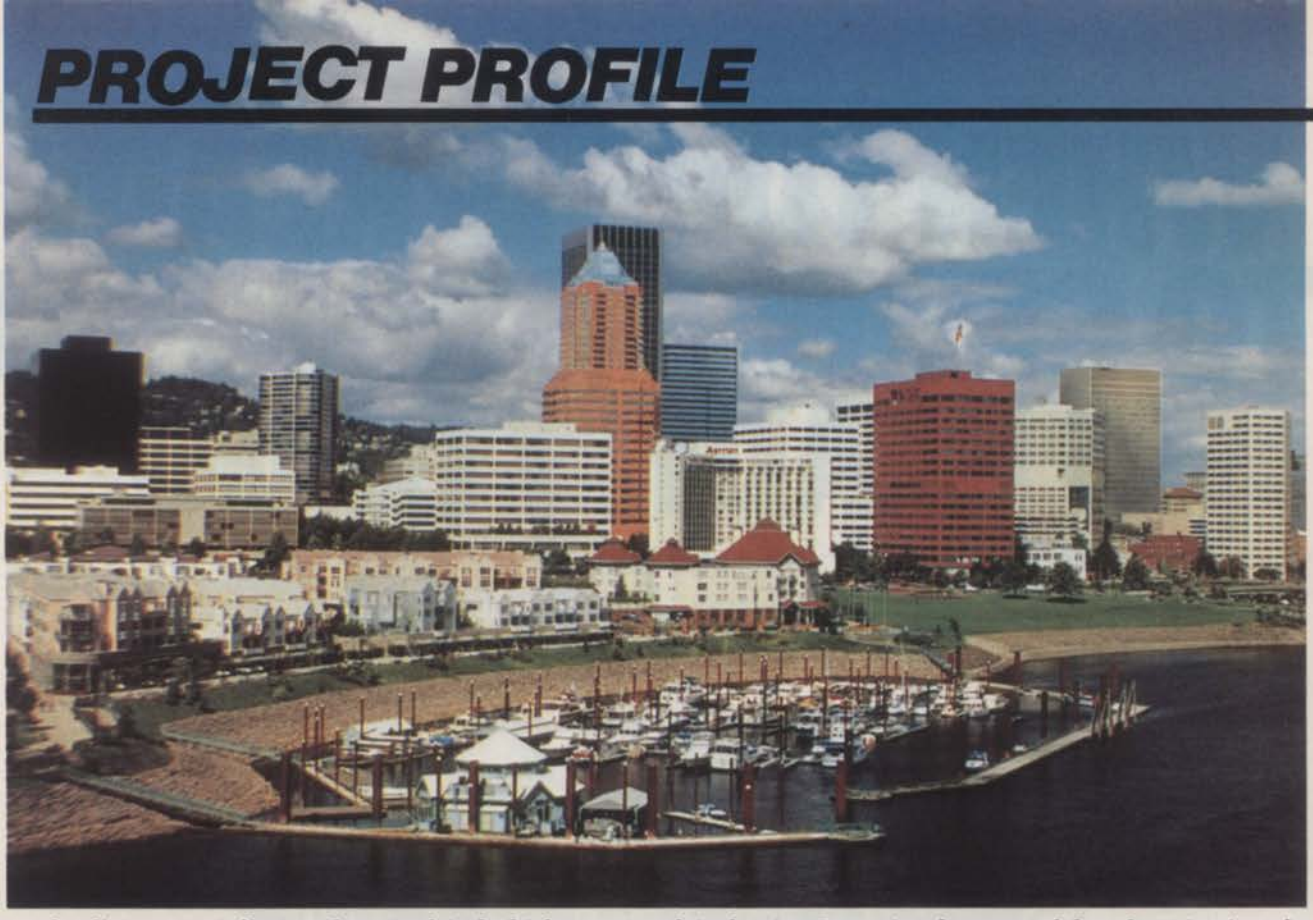
Odorless and pathogenfree

Always look for the NITROFORM® logo.
It's your assurance of high-quality nitrogen.

NOR-AM®
NOR-AM CHEMICAL COMPANY

3509 Silverside Road, P.O. Box 7495, Wilmington, DE 19803

Circle No. 138 on Reader Inquiry Card



Portland's Tom McCall Waterfront Park is the highest use park in the city. Operational personnel there have instituted a system that successfully bridges the gap between those who enjoy the park and those who maintain it.

TRAFFIC DOESN'T DAMPEN BEAUTY OF PORTLAND PARK

To keep Tom McCall Waterfront Park looking good, Portland's Parks Bureau broke it into more manageable areas, established experimental turf areas and upgraded its maintenance practices.

Portland, Oregon's Tom McCall Waterfront Park is often referred to as the flagship of the city's parks system. The 26-acre park, located on the banks of the Willamette River in downtown Portland, is the city's highest use park, with major events scheduled throughout the summer drawing thousands of people.

The park is accessible to residents and visitors in the downtown area. Views of highrises to the west, the river and distant mountains to the east provide an exciting setting that blends urban and pastoral scenery.

Festival time

The park is host to numerous annual festivals, including Cinco de Mayo in May, Neighborfaire and The Bite in July and weekly symphonies in August. In fact, there are 10 major events that draw between 50- and 100,000 participants from May through September, and many smaller events.

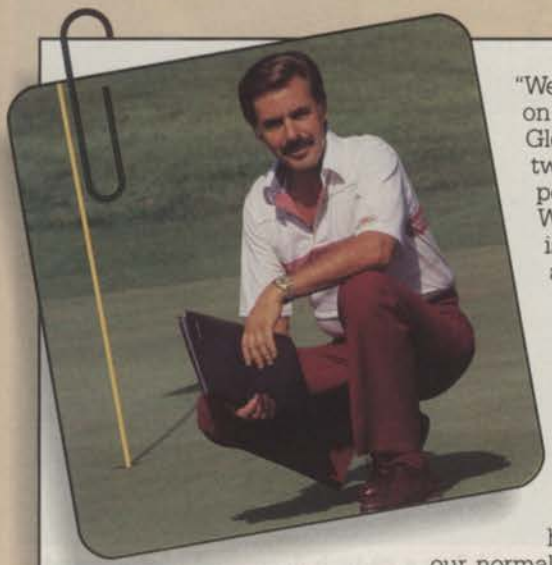
But the Portland Parks Bureau's Maintenance and Operations crews are constantly struggling to keep up with usage demands. For them, the popularity of Waterfront Park has become too much of a good thing.

Over the last few years, the Parks Bureau has developed a variety of methods for dealing with this heavy use. These include establishing new user's fees, breaking the park up into more manageable areas, constantly updating maintenance procedures, and establshing experimental turf areas.

Crowds a problem

The event that draws the largest crowds and wreaks the greatest amount of devastation on the turf is

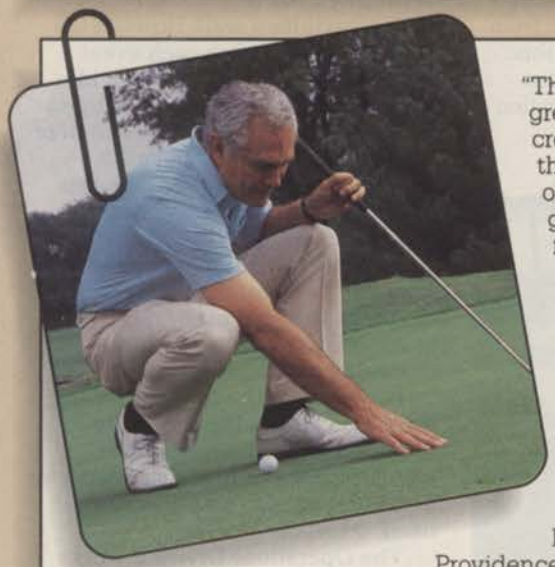
BENTGRASS



"We planted the 12th hole on Singing Hills' Willow Glen Course to SR 1020 two years ago, and it performed admirably. What's really significant is that members keep asking what we've done to the 12th hole that makes it putt so well! The members like SR 1020's performance from the players' point of view; we like that too, but we also value that we haven't had to change our normal greens maintenance program to achieve the results."

David Fleming

David Fleming, C.G.C.S.
Superintendent, Singing Hills Country Club
El Cajon, CA



"The newer golf course greens planted to Penncross look beautiful, but they don't putt like the old South German Bent greens. The putting surface of those old greens is fine-textured, not thatchy or grainy, and the old greens don't show the spike marks like Penncross. We've been needing bentgrasses bred for golf quality as well as turf quality for a long time, and it looks like SR 1020 and Providence fill the bill!"

Peter Trenham

Peter Trenham
President, Philadelphia Section PGA
St. David's Golf Club
Wayne, PA

Finally! New Cultivars Bred To Meet the Needs of the Superintendent and the Golfer!

At Seed Research, we listen to your needs. You've been wanting a bentgrass that's tough, looks great, and is easy to maintain ... but one that's also fine-textured, with good putting green quality. And available.

So when the bentgrass shortage became apparent in 1983, we acted quickly and acquired parental germplasm from two of the finest bentgrass collections in the country — the University of Rhode Island and the University of Arizona. From those collections, we developed two exciting new creeping bentgrass cultivars, Providence (SR 1019) and SR 1020.

Evaluation on golf courses and at universities has shown that both these bents produce the kind of turf you demand: dark green, aggressive, competitive, easy to manage, good disease resistance, good stress tolerance, and compatible with existing bents for overseeding.

And, for real golfers like Peter Trenham, SR 1020 has proven it provides everything desired in a putting green bent: fine texture, uniform surface, and most importantly, an absence of grain, so the ball holds the line for true putting accuracy.

With Providence (SR 1019) and SR 1020, you can look forward to a good-looking grass that will give you the performance you demand and the putting green quality your golfers prefer!

Both varieties are in production and excellent quantities of certified seed are available NOW.

SEED RESEARCH
OF OREGON, INC.

P.O. Box 1416 • Corvallis, Oregon 97339 • (800) 253-5766

Circle No. 151 on Reader Inquiry Card

unquestionably the Rose Festival Fun Center, which runs for two weeks during the end of the area's rainy season. The festival uses more than half the park acreage and requires several days for set up and tear down. During these three weeks all irrigation is shut down.

Over one million feet and innumerable wheels from baby strollers can turn the turf into an oozing quagmire. If, on the other hand, there is no rain, the lack of irrigation results in compacted, dry, burned out areas.

When the last of the carnival is hauled away, the Parks Bureau has less than two weeks to repair the turf before the next major event, Neighborfaire. In the meantime, hundreds of people continue to use the park each day and smaller special weekend events draw thousands.

The first major part of the renovation process involves dragging a six-foot magnet over the turf to find bolts, nails, bottle caps, wire and other metal that might damage turf equipment or park users. This two-to-three day project "takes time but is a key function in our operation," according to Jim Carr, mowing and turf manager for the city.

An experimental section of the park has a 20-inch deep sand medium under perennial ryegrass. A nearby sand sod field provides patches for repairs.

Remove contaminants

After dragging the magnet, the parks crew removes any soil contaminated by oil, grease or hydraulic fluid which would kill the grass. They then aerate, topdress and overseed as needed.

Until very recently, park users paid a single permit fee ($5) for which they could use any or all of the 26 acres and were supposedly responsible for cleaning up their mess. In reality however, taxpayers picked up the bill for most renovation.

In January, 1989, all of that changed. The park was divided into seven sections and a new fee structure was instituted. Now, depending on the area used, the number expected and the activity planned, fees range from $25 per day per section for a public event where no sales or profit are involved to $500 per day per section where products will be sold or admission charged.

Following a major festival in mid-June, the maintenance crew drags a magnet over the turf to remove bolts, nails, bottle caps, wire and other metal.

Under these new regulations, the Parks Bureau can now bill event organizers for any destruction of park property, such as costs for turf renovation and irrigation repairs.

Who pays for it

Carr schedules a walk through the area before and after each event with the event user. This provides the user and the Park Bureau up-to-date information on the condition of the Park, Carr says. The Parks Bureau then assesses the damages after the event and schedules the repair and renovation.

Because festival organizers know they will be accountable for damages, it is in their best interests to insure that vendors reduce damaging practices.

Breaking up the park into seven areas also allows the Bureau to schedule individual areas for maintenance and to assign events for areas best suited to a particular need.

The Operations Division works closely with the park permits desk to schedule open times for maintenance and repair activities in certain sections of the park when needed.

The park also contains a 4½-acre experimental section that has been developed for ease of maintenance year-round. "We needed a turf area

INTRODUCING THE EASE AND CONVENIENCE OF DRIVING A CONVERTIBLE.

THE ALL IN ONE 3, 4, OR 5 GANG LIGHTWEIGHT FAIRWAY MOWING SYSTEM.

■ Versatility plus. A fairway mower that allows you to convert from 3 to 4 or 5 cutting units from the driver's seat. Mow those narrow areas between green and trap or extend this lightweight mower to its full cutting width of 106 inches, the widest in its class. ■ Our quick change cutting units float independently for a manicured finish on the widest fairway or the tightest tee. ■ Then, with foot pedal control, fold this unit to a narrow transport width of only 71 inches, to make tight maneuvers over bridges and into small sheds a breeze. ■ For more information or a free demonstration, write or call us at 414-699-2000 today. **WHERE GREAT IDEAS START.**

RANSOMES

Visit us at the GCSAA Show, Booth #2302.

Circle No. 144 on Reader Inquiry Card

with good drainage for use during heavy spring rains and some compaction resistance for heavy traffic," Carr says. "We restored this section using specifications for a sports turf area, often referred to as the optimum high-use athletic field."

Sand base

The sports turf has a 20-inch deep sand medium, using granular pitrun sand (with most sand particles falling between No. 16 and No. 60 screen) with no organic material and no fines which would tend to lock up. Straight perennial ryegrass seed was sown onto the sand base. This results in much higher fertilization needs and supplementation with lime and micronutrients.

Too much of a good thing? The aftermath of Neighborfaire.

About twice a year the maintenance crews take soil samples to determine pH levels and nutrient deficiencies.

"We look for a well-balanced fertilizer, something that is geared for the acidic soil conditions west of the Cascades, usually a 6-1-3 or 6-1-4 ratio," Carr says. "We use a slow-release sulphur-coated fertilizer so we are able to put down sufficient nitrogen as well as phosphorus and potassium or N-P-K.

"Because of the high use, we feel it is important to have as many micronutrients as possible—iron, manganese, molybdenum, copper, zinc, boron—anything we can do to help revitalize the area."

Construction of this high-use turf began in 1986 and was completed in the summer of 1987. "It has become a very desirable area because it shows minimal wear and is kept fairly lush," Carr says. It is scheduled for moderate use, such as the once-a-week Waterfront Classics that draw about 30,000 people.

The area can be irrigated the day before it is used because the drainage prevents standing water, Carr says.

Simple restoration

"And it is relatively easy to restore. By doing complete aeration and a light topdressing with overseeding a couple times a year, we're able to restore that area and get a good recovery within a week or 10 days after seeding."

To help maintain the sand-based turf, the bureau has established a straight sand sod field from which they can extract sod patches. This allows the crews to fill in divots, voids and holes using the same sand medium. By not adding soil or other foreign organic matter, the purity of the turf is retained.

The reality is... that the over-scheduling of the park is impossible to deal with.

Adding regular sod with a sandy loam soil would cause the sand to lock up, forming an almost cement-like base, Carr says. "We've been able to move the sod without using netting or organic materials. We use a heavy seeding, roll it and then use it within a few hours. We've had excellent recovery—the grass patches take right off."

Carr has had good luck establishing the sod field. Within three months of seeding, the sod field can be cut and used as patches. "Grass on straight sand is working beautifully for us," he notes.

Due recognition

In November the Bureau and Waterfront Park received an award from the Oregon Parks and Recreation Society for excellence in maintenance, particularly under difficult circumstances. Considering the adverse conditions under which they work, Bureau personnel believe this recognition from their peers is indeed an honor.

"It's a very special award to us for a very special park," says Ron Maynard, acting director of Parks and recreation. "On a weekly basis we run the risk of loving it to death."**LM**

Maintenance of sand based turf

Many of the turf areas in Waterfront Park were developed 12 years ago with a sand base and sod containing several inches of loam topsoil. Over the years the combination has resulted in hard compaction on the surface with little drainage.

To break up this compaction, the bureau uses both core aeration and core removal aeration, depending on park scheduling. Shatter core allows aeration with minimum time between events.

After aeration, the turf is topdressed with a clean sand medium using a golf course greens-type topdresser to encourage drainage. The field is then dragged to break up aeration plugs. The topdressed area is then overseeded with straight perennial ryegrass.

"We're constantly changing our specifications, looking for the most drought-resistant, most wear-tolerant ryegrass available. Having the seed capital of the world here in Oregon, we're able to capitalize on the Washington and Oregon state field trials and have better accessibility to new seed varieties, says Jim Carr, mowing and turf manager for the city of Portland.

To control *Poa annua*, the Parks Bureau uses a selective spray such as Nor-Am's Prograss. This product also controls cheat grass, foxtail and other noxious weeds but doesn't affect perennial rye. Carr says the bureau has success with Prograss within two weeks after the seed drop and reseeding with perennial rye.

"Fertilizing is perhaps one of the most important things we are able to do down there. We probably fertilize more often there than in any of our other parks, for both aesthetic purposes and to keep the turf well fed."

Carr notes, however, that they avoid fertilizing right after overseeding. Fertilizing too soon discourages full germination of the seed by encouraging rapid growth of existing grass which competes for nutrients and water and shades the new seeds.

"We like to wait until we get one- to two-leaf germination in the new seed before fertilizing," he says. □

SHINDAIWA TEARS THE COMPETITION APART.

Among commercial trimmers, three names dominate the turf. With Shindaiwa, Echo and Green Machine sharing ⅔ of the market.

So, who makes the best trimmer? We do. We proved it. We matched our new Shindaiwa T-27 against the comparable Echo 2501 and the Green Machine 3000 M. We took them apart. And tore them apart in the process.

Shindaiwa T-27 Flywheel

A TWO STROKE OF GENIUS.

Our 2-cycle engine delivers more power with less weight than either Green Machine or Echo. Quite a feat, considering we sacrifice nothing in quality along the way. Chrome plated cylinders, 2-ring pistons and electronic ignition are standard. The result is a pro machine with the power to work harder. And last longer.

NO BAD VIBES.

Shindaiwa trimmers have the finest anti-vibration design in the industry. We pioneered anti-vibe design. Every unit is engineered around the concept of lowest possible vibration to reduce user fatigue. Even our harness is made to absorb vibration. Our T-27 represents our second generation of superior anti-vibe design.

Shindaiwa T-27 Shaft

YOU WON'T GET SHAFTED BY SHINDAIWA.

Our shaft is 7MM diameter and splined at both ends for easy maintenance. It's also relieved at the engine end for absorbing greater torsional loading. Compare that to Echo's smaller 6MM flex cable. It's the same thing we use on our smallest homeowner flex shaft unit.

LIGHT IN WEIGHT. BUT NO LIGHTWEIGHT.

Special alloys make our units strong, easy to handle and extremely light weight. But our T-27 still delivers greater horsepower than either Echo or Green Machine.

SHINDAIWA KNOWS HOW TO COOL IT...

Our flywheel has a larger fin area than either Echo's or Green Machine's. So it delivers excellent cooling under high heat, high load conditions.

...BUT WE CAN ALSO TAKE THE HEAT.

Shindaiwa's large insulator block allows for a cooler carburetor temperature and less chance of vapor lock. Others are puny in comparison.

SHINDAIWA COMES THROUGH IN THE CLUTCH.

Greater horsepower requires a larger clutch. Our two-shoe bonded clutch is larger than either Green Machine's or Echo's. So it has greater contact area. That results in longer life and smoother, positive engagement.

Shindaiwa T-27 Clutch

COME TO GRIPS WITH A SHINDAIWA.

Our T-27 features a suspended front handle grip made of double-density rubber. Compare that to either Green Machine's J-loop handle made of less durable open cell foam or Echo's one-piece grip of hard plastic. You can feel the difference all over your body.

A PROFESSIONAL APPROACH TO CARBURETORS.

An efficient metal slide-valve TK carburetor allows our T-27 to cut in all directions and deliver precise fuel/air metering throughout the mid RPM ranges where pro trimmers frequently work. It's the same type of carb found on high performance motorcycles. Echo and Green Machine, on the other hand, offer plastic rotary-valve carburetors designed for homeowner trimmers.

Shindaiwa T-27 Carburetor

NOW, HERE'S THE BEST PART:

Every Shindaiwa trimmer is backed by a 7-day money back guarantee. If, after one full week, you're not convinced that our T-27 is the best trimmer you've ever used, we'll buy it back. No questions asked. You can't lose.

READ ALL ABOUT IT.

Send for free literature that tells our comparison story in full detail. And discover Shindaiwa superiority part by part. You'll never be torn between trimmers again.

shindaiwa

WE SIMPLY MAKE THEM BETTER.

11975 S.W. Herman Rd., Tualatin, Oregon 97062

Circle No. 154 on Reader Inquiry Card

FIGURING THE COST OF FERTILIZER

Simple mathematics can tell you when it's a waste of money to apply additional fertilizer.

by S.T. Cockerham, University of California, Riverside

In most crops, fertilizer inputs are measured against yield; for important purchases, the cost is evaluated against return. This doesn't work in turfgrass management, for the simple reason that there is no measurable yield.

Sod producers sometimes try to compare growth rate and turf quality to fertilizer cost to determine when applying more fertilizer becomes a waste of money. But few growers are satisfied with the procedure.

Turfgrasses readily respond to nitrogen (N) fertilizers because N is frequently deficient. Usually a dramatic color response is followed by rapid growth. Once the turf color is as green as it can get, increasing the N rate continues to increase the turf's growth rate. At some point, however, the turf growth rate no longer increases as fast as the increase in nitrogen. That is when it is no longer cost-efficient to increase the N application rate.

Weighing clippings

One way to measure turf growth rate is to weigh the clippings removed at mowing. In Fig. 1, the clipping yield increases with increased nitrogen up to 4 lbs. per 1,000 sq. ft. when the rate actually causes a reduction in the clipping yield, therefore, a reduction in growth. Before that point the growth rate increase slows down with increased nitrogen.

For example, the growth rate increase in going from 0.5 to 1.0 lb. N is several times that measured going from 1.0 to 2.0 lbs. N. This means that fertilizer costs increase significantly for the small gain in growth rate.

In Fig. 2, the root and rhizome dry matter yield of Kentucky bluegrass drops off very significantly from 0 N to 0.75 lbs. 1,000 sq. ft./month. Over 0.75 lbs. the rate of root and rhizome growth nearly stops. Eventually, the roots reduce in number and length.

There are agronomic as well as economic upper limits to nitrogen fertilizer applications.

FIGURE 1.

CLIPPING YIELD RESPONSE TO NITROGEN

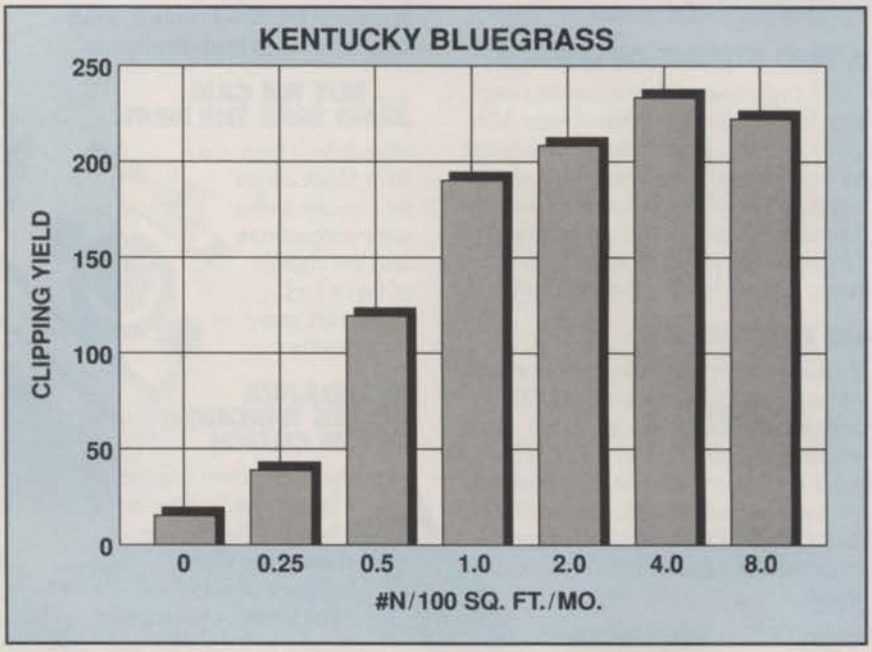
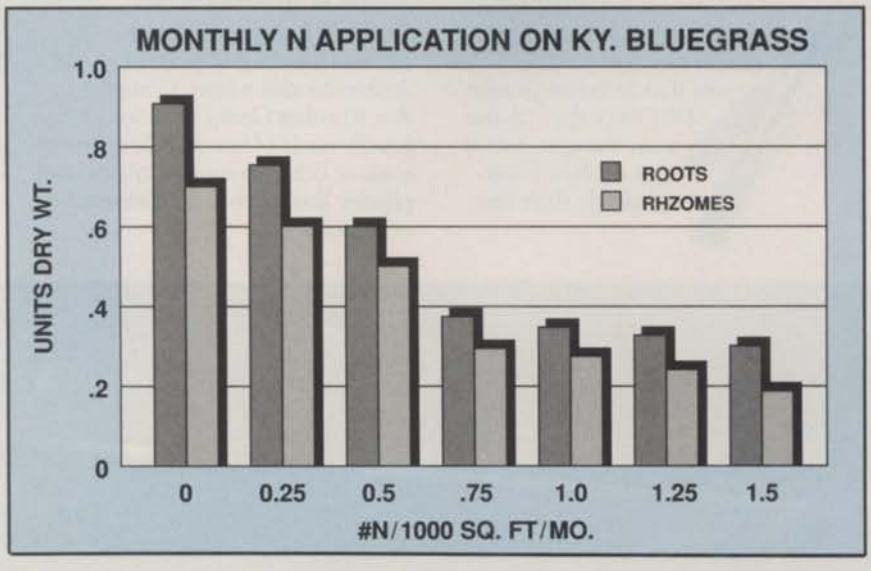


FIGURE 2.

ROOT AND RHIZOME RESPONSE



Our finest products are lush, green, and vigorous. Our best work is knowing we can stand behind them.

Years of field experience. Continuous research. Nationwide testing. All these are hidden in every blade that sprouts from a Northrup King Medalist® Turfgrass Mixture.

Mixtures such as Athletic Pro® II, Medalist North, Premium Sod Blend, Landscape Pro, and the Medalist Winter Overseeding Products. And we never stop improving them.

For help with your toughest turf problems, contact us. Then we can show you more of our best work. Listening.

And answering with turfgrass mixtures that work.

Northrup King Medalist Turf Products, P.O. Box 959, Minneapolis, MN 55440 ©1985 Northrup King Medalist

MEDALIST TURF PRODUCTS ™

Circle No. 139 on Reader Inquiry Card

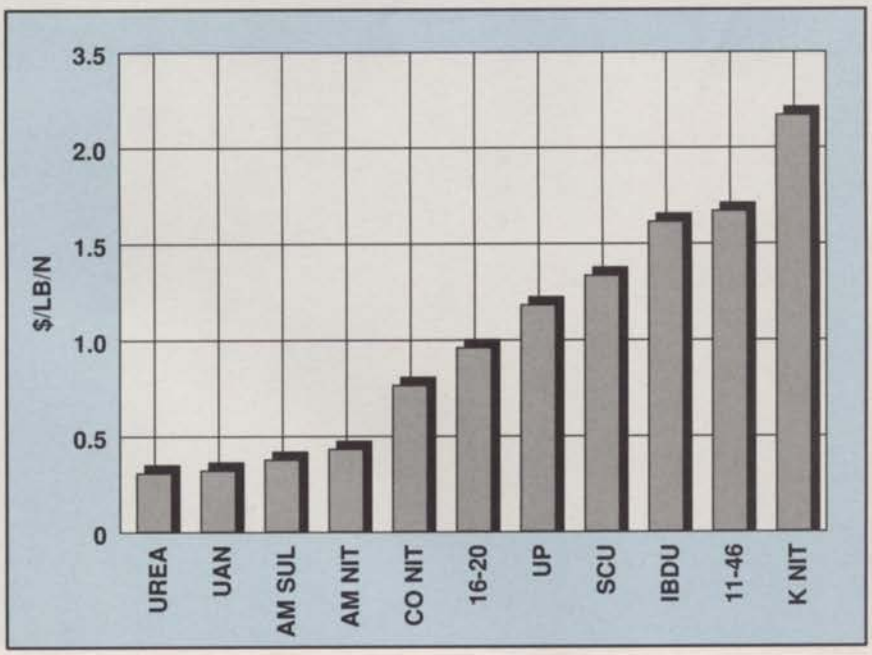
FIGURE 3.

COMPOSITION OF FERTILIZER MATERIALS

MATERIAL	NITROGEN % (N)	PHOSPHORUS % (P205)	POTASSIUM $ (K20)	LBS. N/TON	$/TON	$/LB/N
AMMONIUM SULFATE	21	0	0	420	$150.00	$.36
AMMONIUM NITRATE	33.5	0	0	670	$288.50	$.43
MONOAMONIUM PHOSPHATE	11	40	0	220	$360.00	$1.64
AMMONIUM PHOSPHATE- SULFATE	16	20	0	320	$299.60	$.94
CALCIUM NITRATE	15	0	0	300	$224.25	$.75
UREA	45	0	0	900	$260.00	$.29
UREA FORMALDEHYDE	30	0	0	760	$890.00	$1.17
ISOBUTYLIDENE DIUREA (IBDU)	31	0	0	620	$1000.00	$1.61
UREA AMMONIUM NIRATE SOLUTION	32	0	0	640	$190.00	$.30
POTASSIUM NITRATE	13	0	45	260	$560.00	$2.15
SINGLE SUPER PHOSPHATE	0	20	0	0	$253.00	
TRIPLE SUPER PHOSPHATE	0	45	0	0	$349.00	
SULFUR COATED UREA	35	0	0	700	$930.00	$1.33
WHALE GUANO	9.5	6.5	2	190		

FIGURE 4.

COST OF NITROGEN IN FERTILIZER



Fertilizers are produced with a wide range of nutrient content. The nutrient analysis of a fertilizer is always shown as three numbers on a label representing the primary nutrients, nitrogen (N), phosphorus (P) and potassium (K), and always in that order. The numbers represent the percent by weight. Any other nutrients in the fertilizer will be shown elsewhere on the label.

Remembering analysis

A fertilizer analysis of 10-5-8 means that 10 percent of the material's weight is N, 5 percent is P and 8 percent is K. If the fertilizer is in a 50 lb. bag, 5 lbs. is N (50 lbs. x 10% N = 5 lbs. N), 2.5 lbs. is P (50 lbs. x 5% P = 2.5 lbs. P) and 4 lbs. is K (50 lbs. x 8% K = 4 lbs. K).

In Fig. 3, the composition of several commonly-used fertilizer materials is shown with the amount of nutrients present. The pounds of N contained in a ton of fertilizer is shown along with the cost of a ton of the fertilizer. In the last column, the cost of N per pound has been computed.

Ammonium sulfate (21-0-0) is listed at $150 per ton and urea (45-0-0) is $260.

Even though a ton of ammonium sulfate is less expensive than a ton of urea, the ammonium sulfate N is 36 cents per pound and the urea N is 29 cents. There is over twice as much N in urea (45%) than in the ammonium sulfate (21%).

A turf manager who has 50,000 sq. ft. of turf wants to apply one pound of N per 1,000 sq. ft. So it will take 237.45 lbs. of ammonium sulfate at a cost of $85.50.

$$\text{lbs. fert./1000 sq. ft} = \frac{\text{1.00 lb. N/1000 sq. ft.}}{\text{.21 lb. n/lb. fert.}} = 4.75$$

lbs. fert./50,000 sq. ft. = 50 × 4.75 = 237.5

$/50,000 sq. ft = 237.5 × $.36 = $85.50

It will take 110 lbs. of urea to put one pound per 1,000 sq. ft. on 50,000 sq. ft. of turf at a cost of $31.90.

$$\text{lbs fert./1000 sq. ft} = \frac{\text{1.00 lb. N/1000 sq. ft}}{\text{.45 lb. N/lb. fert.}} = 2.2$$

lbs. fert./50,000 sq. ft. = 50 × 2.2 = 110

$/50,000 sq. ft. = 110 × $.29 = $31.90

In this example, even though the cost of urea is considerably higher per ton than ammonium sulfate, it is significantly less expensive to use. The turf manager is looking at $85.50 to fertilize the area with ammonium sulfate or $31.90 to use urea.

In Fig. 4, the cost of nitrogen per pound is shown graphically for several fertilizers as a comparison. Soluble fertilizers are the least expensive. Slow-release materials and those containing other nutrients are at the other end of the scale.

Fertilizer cost is an important factor in the buying decision. Unfortunately, getting the right fertilizer is not always as simple as using the cheapest N source.

Ammonium sulfate provides sulfur as well as nitrogen. IBDU is a slow-release nitrogen source, which means a steady supply of N to the plants and few applications. Urea has a high N analysis so the turf manager handles less material. Monoammonium phosphate has available phosphorus. All of these are important considerations in choosing a fertilizer material.

Break-even analysis

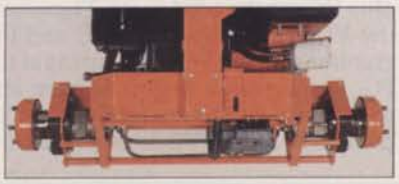
In any business enterprise, at some point in the income and cost relationship there is no profit or loss. That is the point at which the operation will break even (BE). Obviously, one of the goals of a business is to operate at a profit, which is above the BE.

WE DESIGNED MORE HOURS INTO OUR NEW HYDRO SO YOU GET MORE OUT OF IT.

Scag introduces a simple, straight-forward hydro drive system that gives you the dependability and long-life not found in competitive hydros. This new system features two heavy-duty White motors and a rugged Sundstrand pump, proven performers in commercial applications.

Each drive system component can be easily removed for servicing with a minimum of downtime and labor cost. In addition, this hydro is backed with a two-year commercial warranty.

And you can depend on a Scag for a manicure finish cut every time. A pneumatic shock absorber (patent pending) controls deck floatation and increases operator comfort. This new hydro has a wider stance for greater stability on hillsides. Cutting performance is enhanced



by 20-inch tires for greater traction and less tracking. And this new hydro has a top speed of over 8 MPH for increased productivity.

Your success depends on your equipment. When you buy a Scag, you get simply the best commercial equipment from a manufacturer who specializes in the commercial market. For more information about the new Scag hydro rider contact your local Scag dealer.

SIMPLY THE BEST

MOW NOW, PAY LATER.
ONLY 15% DOWN, NO PAYMENT UNTIL JUNE
With Scag Leasing. Offer Good 1/15/90 to 4/15/90.

SCAG®
POWER EQUIPMENT

Subsidiary of Metalcraft of Mayville, Inc., 1000 Metalcraft Drive, Mayville, Wisconsin 53050

© SCAG POWER EQUIPMENT, 1990. ALL RIGHTS RESERVED.

Circle No. 153 on Reader Inquiry Card

(Public organizations target break-even and do not wish to perform above that.)

The relationship of the BE to costs and fee revenue (sales) for a turf facility is shown graphically in Fig. 5. In this example, it is assumed that the information represents one year. Variable costs (VC) are the costs that are the most closely related to fee revenue.

Certain costs depend on the level of activity at that facility. Activities such as lawns serviced, rounds of play, number of games played, or sod sold affect supplies, labor hours, fuel and deliveries. These are variable costs.

When the activity level increases, the fee revenue increases and the VC increases to meet the demand. When fee revenues go down, the VC must also go down, often a major management challenge.

Fixed costs (FC) are fixed for more than one year. They do not change regardless of the fee revenue or level of activity. FC includes management salaries, office rent, mortgage payments and equipment installments.

Graphing profit

The FC are shown as a straight line in the graph since they do not change. FC plus VC are the total costs. Therefore, the VC are on top of the FC and the graph shows the VC line starting at the FC. Fee revenue begins at zero and goes up since it has to total costs. The point where the VC line crosses the fee revenue line is the BE. Notice how the two lines rapidly spread after the BE. This shows how quickly profits (revenue surplus) can build if VC are kept under control. If VC are allowed to increase, the BE will slide higher on the fee revenue curve.

The BE is useful for much more than determining the organization's profitability. It can be used to establish the actual cost of expenditures. The BE can be used to determine the actual cost to the organization of any supply purchase, new employee hire or equipment purchase.

In Fig. 6, the BE shown graphically in Fig. 5 is computed. The example uses the BE to cost out the purchase of a load of fertilizer.

The VC and FC are computed as percent of fee revenue by dividing each by the fee revenue dollars (shown as thousands).

$$BC\% = \frac{VC}{\text{Fee Revenue}} = \frac{764.5}{1300} = 58.81\%$$

$$FC\% = \frac{FC}{\text{Fee Revenue}} = \frac{415.5}{1300} = 31.96\%$$

The marginal ratio (MR) is a ratio of fee revenue to variable costs. It shows what is needed to cover the fixed costs and profit (surplus). The MR is calculated by subtracting the VC as percentage of fee revenue from 100 percent, which represents all sales.

$$MR = 100\% - VC\% = 100 - 58.81 = 41.19$$

The BE is calculated by dividing the FC by the MR.

$$BE = \frac{FC = 415.5}{MR \quad .4119} = 1008.7$$

This facility would have to make $1,008,700 in fee revenue to break even. Fee revenue over that level begins to accumulate profit.

A load of fertilizer costs $5,000. By dividing the fertilizer cost by the MR the manager can determine how many dollars in fees must be made to pay for the fertilizer.

$$\text{Fees Needed} = \frac{\$5{,}000}{.4119} = \$12{,}138.87$$

It would take more than $12,000 in fees to pay for a $5,000 load of fertilizer. The true cost of expenditures can get to be quite high if variable costs are not controlled.

The actual cost of fertilizer is often inexpensive when compared to the benefits it can provide an operation.

FIGURE 5.

BREAK EVEN ANALYSIS TURF FACILITY

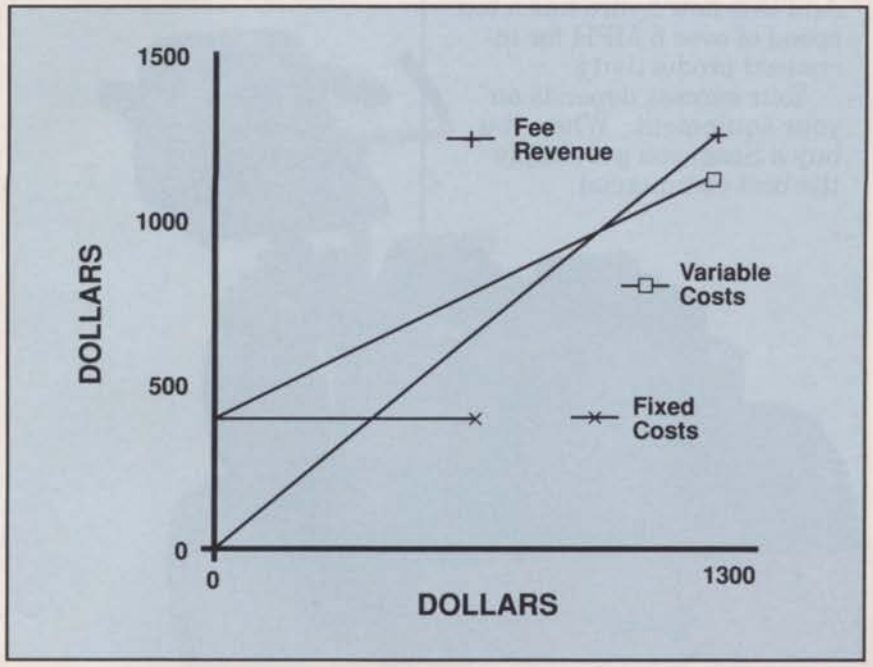


FIGURE 6.

BREAK EVEN ANALYSIS TURF FACILITY

	DOLLARS (1000)	AS% Of Fee Revenue
FEE REVENUE	1300	
VARIABLE COSTS	764.5	58.81
FIXED COSTS	415.5	31.96
MARGINAL RATIO*		41.19
BREAK EVEN (FC/MR)	1008.7	
* MARGINAL RATIO = % FEES AVAILABLE TO COVER FIXED COSTS AND PROFIT AFTER DEDUCTING % REQUIRED FOR VARIABLE COSTS (MR = 100% − VC%)		
TRUCK LOAD FERTILIZER @ $200/TON		$5000.00
FEES NEEDED TO BUY FERT. (COST/MR)		$12,138.87

High Pointe GC in Traverse City has everything...heat, cold, snow, rain, wind, shade, traffic and *Oregon Grown Fine Fescue.*

High Pointe GC in the resort town of Traverse City, Michigan, is exposed to extremes of nature and man. This course demands a great deal from its turfgrass ... that's why it's wall-to-wall Oregon grown fine fescue.

Architect Tom Doak desired a links-type course with low maintenance qualities. Fine fescue filled that bill. Now, superintendent Dan Pillard finds that thousands and thousands of dollars have been saved establishing the turf, and in maintenance costs, over other species.

And since it's from Oregon grown seed, they know the turf will stay manageable, predictable and playable.

For a series of tech sheets on Oregon Grown Chewings and creeping red fescues, call or write:

OREGON FINE FESCUE COMMISSION
866 Lancaster Dr. SE
Salem, OR 97301
503-585-1157

Circle No. 141 on Reader Inquiry Card

USING DIRECT MAIL AS A MARKETING TOOL

A direct mailer may be one of the best marketing tools available to attract new customers in the landscape market.

by Ed Wandtke

MANAGEMENT IN BUSINESS

Direct mail is often overlooked as a marketing opportunity, except by the most progressive of today's landscaping companies.

Many landscaping companies are sloppy in the way they use direct mail. They don't understand how to put it to work or the costs involved in building a program.

For those considering a direct mail program, it's important to note that your most likely new customer is probably living next door to one of your past or present customers. Therefore, a successful direct mail campaign will use these clients to help sell services.

Other factors need to be taken into consideration in order for a direct mail campaign to be a success in the green industry. For example:

Know your market. The direct mailer as used in landscaping differs greatly from one that might be used in lawn care. You probably don't have as many customers as a lawn care company, so you have the opportunity to analyze their situation more closely.

Get some idea of the income level and home value of the people you want to service. Whether you are in commercial or residential work, you have to be able to target those people you want to reach. This will help lower the cost of a direct mail campaign while increasing the possibility that it will be successful.

Find a market segment that offers the best chance of success. Once you know your market, concentrate your efforts there. It must be a geographical segmentation, but often it's a demographic one too. In demographics we look at age, home value and income as major variables in defining our "perfect" customer.

To find demographic information such as home value, age and income, work with a mailing company. Both local and national mailing companies have this type of information at a relatively low cost. Use it to examine addresses, income and home value in different parts of your locale. You may be surprised to find that there are many people nearby who fit your customer profile.

Do a current customer profile. In order to locate your market segment, find out who has bought your services in the past. Potential clients who fit their profile are likely to be the ones who will respond positively to your direct mailing.

Don't limit yourself to geographical segmentation.

Strut your stuff. For artwork, use either your own renderings, blueprints or drawings, or pictures of some of your current landscaping jobs.

More than 80 percent of the buying decision is made through visual means. If you have a strong visual, use it. If it explains to the consumers what they will receive if they retain you, so much the better.

Don't be wordy. Most brochures contain too much copy. Your product is primarily visual, so show it to the customer.

Make an offer to the consumer. If you can't make an offer, there is no reason for the consumer to continue to look at your brochure. The offer can be to make the area around the home more livable and enjoyable.

Don't mail to too many people. Should you find a responsive audience, you need to be able to get to them fairly quickly for the first contact. The consumer will wait for your service after they have made the buying decision, but they don't want to wait for the first contact. If you mail too many brochures, you may find you can't service the leads quickly enough.

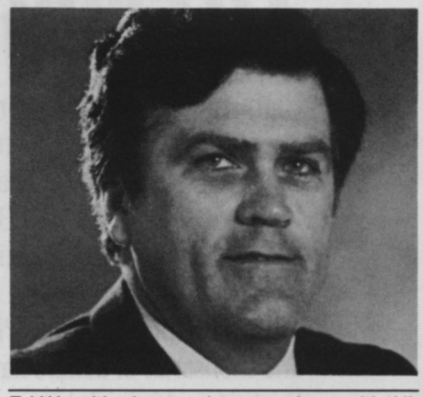
Be prepared to do multiple mailings. Multiple mailings are often necessary. If you send out your brochure once, you may not get a strong response. But by sending the same piece out again, you'll do little more than waste your money.

You may mail only a few hundred brochures in order to obtain enough business to keep you busy and growing. Because you aren't sending out thousands, as is done in lawn care, you should make sure that the brochure's quality is very high.

Remember that the key to successful direct mailing is to identify those people who are the most likely buyers. By combining a target market with a professional brochure, you can attract customers who would otherwise be unapproachable.

The landscape industry offers many opportunities for direct mailing. Because so little of it is done, the professional company using direct mail successfully is formidable competition in this young marketplace.

By properly targeting your audience with a high quality mailer, you'll be professional and profitable. **LM**



Ed Wandtke is a senior consultant with All-Green Management Associates, in Columbus, Ohio. He focuses on operations and financial questions.

WE'D LIKE TO TELL YOU ABOUT THE BIRDS AND THE BEES.

We'd also like to tell you about pets and other animals, and hundreds of species of ornamental plants.

Because they are the biggest reasons to use Mavrik Aquaflow.®

Mavrik® is water-based, effective at very low rates, and gentle on beneficial species. It is a non-restricted product and can even be sent through the mail!

Mavrik won't harm plants either, not even when sprayed on open blooms.

Yet Mavrik has excellent broad spectrum efficacy against most insect pests as well as mites.

So switch to Mavrik. Then if your customers are concerned about the materials you use, you can tell them about the birds and the bees too.

SANDOZ
CROP PROTECTION
CORPORATION
DES PLAINES, IL 60018

Use pesticides effectively. Read and follow label directions carefully.

© 1989 Sandoz Crop Protection Corporation
Mavrik and Mavrik Aquaflow are registered trademarks of Sandoz, Ltd.

Circle No. 149 on Reader Inquiry Card

LANDSCAPE MANAGEMENT

1989 ARTICLE INDEX

Aeration: Room to Breathe
Terry McIver, January, p. 36
Arizona: On a Deserted Highway
June, p. 34
Athletic fields: Safe at Any Speed
Dr. John N. Rogers III, August, p. 40
Athletic fields: Warm-Season Calendar
Dr. John R. Hall III, January, p. 56
Atlanta Country Club: Weathering a Championship
May, p. 72

Bannockburn Lake Office Plaza
Will Perry, November, p. 20
Bio-Controls for the Green Industry
Dr. John D. Briggs, November, p. 30 and December, p. 34
Budgeting: How Will You Do?
Dr. Rudd McGary, March, p. 74

Chicago Botanic Garden
Will Perry, March, p. 84
Cleveland Hopkins Airport: Emergency!
Carl Kovac, February, p. 96
Containers and Winter Injury
Jim Borland, August, p. 30

Disease Control: Cool-Season Guide
Dr. Bill Shane, June, p. 48
Disease Control: Warm-Season Guide
Dr. Don Blasingame, June, p. 40
Diversification: One Step Beyond
Dr. Rudd McGary, February, p. 106
Dodgertown
Will Perry, May, p. 60
Drainage: the Unseen Killer
Dr. Ricks Pluenneke, March, p. 78

Employee Morale
Ed Wandtke, May, p. 82
Employee Retention
Ed Wandtke, June, p. 66
Employees: Are They Legal?
Richard I. Lehr, February, p. 90
Employees: Whither Comest the People?
Jerry Roche, October, p. 20
Engines: The Demand for Diesel
Dennis Bourgoin and Tom Kane, August, p. 45
Engine Training
Al Jacobsen and Ron Hansen, January, p. 86
Environmental Landscape Service
Will Perry, March, p. 110
Equipment Winterization
Jay Holtzman, November, p. 24
Estimating Strategy, The Importance of
Charles Vander Kooi, December, p. 36

Fairways of the Future
Will Perry, August, p. 24
Fertilization, A Guide to Turfgrass
Dr. Thomas R. Turner, March, p. 100

Gels, Wetting Agents for Trees and Shrubs
Dr. Terry Tattar, March, p. 88
Golf Course Superintendents
Will Perry, January, p. 30
Greens: No Speed Limit
Dr. Karl Danneberger, April, p. 66

Insect Control, Cool-Season Guide
Dr. Harry Niemczyk, April, p. 48
Insect Control, Warm-Season Guide
Dr. Pat Cobb, April, p. 38
Insect Control on Woody Plants
Dr. D.G. Nielsen and Dr. J.R. Baker, May, p. 44
Insecticides: Attacking from Within
Will Perry and Dr. Harry Niemczyk, March, p. 64
Irrigation: Blending Aesthetics
March, p. 94
Irrigation Idioms
Jerry Roche, January, p. 78

Kapalua Bay Golf Course
January, p. 82
Kent White Clover
R.E. DeGregorio and R.A. Ashley, February, p. 102
Kiahuna Golf Course
May, p. 42

Landscape Manager of the Year
November, p. 44
Low-Input Landscaping
Dr. W.M. Mitchell, January, p. 50
Landscapers: Survival of the Fattest
Terry McIver, February, p. 36

Mount Kenya Safari Club
Ann Reilly, January, p. 71
Mowers, New and Improved
February, p. 44
Mowers, Starting
April, p. 84
Mowing, Monitoring
May, p. 76

Newark: the Tradition Continues
Frank J. Sudol and Alvin L. Zach, February, p. 58
New York City Parks
July, p. 56
Nightlighting
January, p. 92

Oak Hill Country Club: U.S. Open
Ann Reilly, October, p. 26
Opryland: Paradise Under Glass
Terry McIver, February, p. 74

People, a Tree's Worst Enemy
Dr. Terry Tattar, January, p. 46
Planning for Progress
Terry McIver, July, p. 47
Planning for Succession
Ed Wandtke, July, p. 60
Pocket Guide to Management
various authors, October supplement
Pocket Guide to Seed
various authors, June supplement
Post-erizing Landscapes
Dr. Ronald C. Smith, February, p. 67
Productivity and Profits
Ed Wandtke, August, p. 62

Quail Hollow Resort: Wounded Bird
May, p. 78

Renovation Time
March, p. 38
Roadsides, The Best of
July, p. 34
Seed Report: The Harvest Is In
Terry McIver, October, p. 32
Sentry World's Watchdog
Jerry Roche, February, p. 82
Sod, A Stronger
Dr. J.R. Hall III, June, p. 60
State of the Green Industry
various authors, December, p. 18

The Stratford
Will Perry, January, p. 90
Tall Fescues for Urban, Dry Landscapes
Bob Morris and John Van Dam, July, p. 42 and August, p. 54
Trade Shows, Getting the Most Out of
Ed Wandtke, November, p. 50
Training Insurance
Dr. Lawrence Kokkelenberg, February, p. 52

Trade In The Tools Of Your Trade!

Trade in *any* broken or used cutter, trimmer, blower, or sprayer for a Maruyama product and get factory cash back for your trade!

You can depend on the uncompromising quality of Maruyama commercial equipment. It's built for long life and backed with parts & service by local qualified dealers. We make long life products. When you're looking for the very best, look for Maruyama.

Call your local dealer today
Trade in offer ends soon.

Maruyama's total line includes

- BRUSHCUTTERS
- BLOWERS
- HEDGE TRIMMERS
- MIST DUSTERS
- POWER SPRAYERS
- GRANULE SPREADERS
- SOIL INJECTERS
- MANUAL SPRAYERS
- FRAME MOUNT SPRAYERS
- WATER PUMPS

MARUYAMA

Quality equipment since 1895

U.S. Office
MARUYAMA U.S., Inc.
15436 N.E. 95th St., Redmond, WA 98052
P.O. Box 2167, Redmond, WA 98073
Phone: (206) 885-0811
Fax: (206) 885-0123

Singapore
MARUYAMA MFG. CO., Inc.
16 Raffles Quay
Level 36, Hong Leong Bldg., Singapore 0104
Phone: 321-8943 Fax: 225-9060
Telex: RS 43382 COHQHL

Paris
MARUYAMA MFG. CO., Inc.
34, BD. Haussmann, 75009 Paris, France
Phone: (1) 47 70 28 52
Fax: 011-331-45231830
Telex: MBI 290266F

International Headquarters:
MARUYAMA MFG. CO., Inc.
4-15 Uchi-Kanda 3-Chome
Chiyoda-Ku, Tokyo, 101 Japan

The Tree Challenge
Dr. Terry Tattar, July, p. 52
Trees: Where They Come From
Douglas Chapman, February, p. 76
Trimmers Come of Age
Terry McIver, April, p. 60
The Vandalism Game
Will Perry, April, p. 80
Water, Smart
Terry McIver, May, p. 36
Water Stress, Adventures in
Dr. Don Taylor, August, p. 48
Weed Control, Common Sense
Phil Christian III, November, p. 30
Weed Control: Cool-Season Guide
Dr. Tom Watschke, March, p. 44
Weed Control: Warm-Season Guide
Dr. Tim Murphy, March, p. 54
Wright-Patterson Golf Club
Jerry Roche, June, p. 28
Zoysiagrass, The Search for
Drs. Judy and Doug Brede, April, p. 72

CONTRIBUTING AUTHORS

Ashley, R.A.
Kent Outshines Common White Clover, February, p. 102
Baker, Dr. J.R.
Insect Control on Woody Plants, May, p. 44
Blasingame, Dr. Don
Warm-Season Turf Disease Control Guide, June, p. 40
Borland, Jim
Containers and Winter Injury, August, p. 30
Bourgoin, Dennis
The Demand for Diesel, August, p. 45
Brede, Dr. Doug
The Search for Zoysiagrass, April, p. 72
Brede, Dr. Judy
The Search for Zoysiagrass, April, p. 72
Briggs, Dr. John D.
Bio-Controls for the Green Industry, November, p. 30 and December, p. 34
Chapman, Doug
Where the Trees Come From, February, p. 76
Christian, Phil III
Common Sense Weed Control
Cobb, Dr. Pat
Warm-Season Insect Control Guide, April, p. 38
Danneberger, Dr. Karl
No Speed Limit, April, p. 66
DeGregorio, R.E.
Kent Outshines Common White Clover, February, p. 102
Hall, Dr. John R. III
Warm-Season Athletic Field Calendar, January, p. 56; A Stronger Sod, June, p. 60
Holtzman, Jay
Trimmers Come of Age, April, p. 30; Winterizing Equipment, November, p. 24
Kane, Tom
The Demand for Diesel, August, p. 45
Kokkelenberg, Dr. Lawrence
Training Insurance, February, p. 52
Kovac, Carl
Emergency!, February, p. 96
Lehr, Richard I.
Are Your Employees Legal?, February, p. 90
McGary, Dr. Rudd
One Step Beyond, February, p. 106; How Will You Do This Year?, March, p. 74
McIver, Terry
Room to Breathe, January, p. 36; Survival of the Fattest, February, p. 36; Paradise Under Glass, February, p. 74; The Politics of Water, April, p. 60; Smart Water, May, p. 36; Planning for Progress, July, p. 47; The Harvest Is In, October, p. 32
Mitchell, Dr. W.M.
Low Input Landscaping, January, p. 50
Morris, Dr. Bob
Tall Fescues for Urban, Dry Landscapes, July, p. 42 and August, p. 54
Murphy, Dr. Tim
Warm-Season Weed Control Guide, March, p. 54
Nielsen, Dr. D.G.
Insect Control on Woody Plants, April, p. 44
Niemczyk, Dr. Harry
Attacking from Within, March, p. 64; Cool-Season Insect Control Guide, April, p. 48
Perry, Will
Superintendents on Course, January, p. 30; Attacking from Within, March, p. 64; Learning While You Rest, March, p. 84; Doing It the Environmental Way, March, p. 110; The Vandalism Game, April, p. 80; The Dodgers' Other Manager, May, p. 60; Fairways of the Future, August, p. 24; East Meets West in Suburban Chicago, November, p. 28
Pluenneke, Dr. Ricks
The Unseen Killer, March, p. 78
Reilly, Ann
A Swinging Safari, January, p. 71; Open Heavens Can't Close Open Course, October, p. 26
Roche, Jerry
Irrigation Idioms, January, p. 78; The Sentry's Watchdog, February, p. 82; Coping with Construction, June, p. 28; Whither Comest the People?, October, p. 20
Shane, Dr. Bill
Cool-Season Turf Disease Control Guide, June, p. 48
Rogers, Dr. John N. III
Safe at Any Speed, August, p. 40
Smith, Dr. Ronald C.
Post-erizing Landscapes, February, p. 67
Tattar, Dr. Terry
People, a Tree's Worst Enemy, January, p. 46; Gels, Wetting Agents for Trees and Shrubs, March, p. 88; The Tree Challenge, July, p. 52
Taylor, Dr. Don
Adventures in Water Stress, August, p. 48
Turner, Dr. Thomas
A Guide to Turfgrass Fertilization, March, p. 100
Van Dam, Dr. John
Tall Fescues for Urban, Dry Landscapes, July, p. 42 and August, p. 54
Vander Kooi, Charles
The Importance of Estimating Strategy, December, p. 36
Wandtke, Ed
Keeping Them Happy, May, p. 82; Employee Retention, June, p. 66; Planning for Succession, July, p. 60; Boost Productivity and Profits, August, p. 62; Getting the Most Out of a Trade Show, November, p. 50; State of the Green Industry, December, p. 18
Watschke, Dr. Thomas
Cool-Season Weed Control Guide, March, p. 44

CARE
We're Helping People
Learn To Live Without Us.
1-800-242-GIVE

LETTERS *From page 28*

should be of interest to your readers, but I found many errors in the article.

In reference to Devine, I would add that the University of Florida program that developed the fungus *Phytophthora palmivora* for use as a mycoherbicide against milkweed vine on citrus trees was so successful that the market for Devine declined because the fungus remained active in the soil. An example of a more widely used mycoherbicide is the Upjohn product Collego (the fungus *Collectotrichum gloeosporioides* f. sp. *aeschynomene* developed at the University of Arkansas) which is used to control northern jointvetch in rice and soybeans.

Gordon E. Holcomb, Ph.D.
Louisiana State Univ.

"This Baby Will Steal Your Heart."

"When you put as much into something as I have with this new 30-H, it gets close to you. But I think it's the kind of machine you're going to love. It's got a Yanmar diesel that turns out 30 horses for all the power you'll ever need. The 72" deck gives you the big cut you want for wide area mowing. Talk about smooth. The hydrostatic transmission really gets the job done. And our special rear-wheel steering leaves a "0" uncut circle. Naturally, the 30-H has all the dependability we build into every Gravely. Let me tell you, this baby will steal your heart."

Ask your local Gravely dealer to introduce you to the powerful, new 30-H today. GRAVELY

Larry Miller, Director of Engineering
Gravely International, Inc.
Clemmons, North Carolina

Fall In Love With A Gravely

Gravely International, Inc., P.O. Box 5000, One Gravely Lane, Clemmons, NC 27012 • 919-766-4721 • Telefax: 919-766-7545

Circle No. 221 on Reader Inquiry Card

Superintendents: What they do best

According to a LANDSCAPE MANAGEMENT survey, golf course superintendents do what's necessary to keep the course running well, are well paid (and are paid for overtime), and receive proper medical and dental benefits.

All 34 of the superintendents interviewed for the survey provide weed and insect control and aerate their courses regularly. Disease control, mowing and fertilization are performed at 97 percent of their courses. Ninety-four percent use an irrigation system, and 85 percent perform in-house renovations. An even 50 percent practice aquatic weed control, either chemically or by using aerifiers.

The average land taken up by a U.S. course today 143.5 acres.

Unless they're all trying to feed families of eight, superintendents' pay is staying competitive. Average salary for 1989 is $30,720. The majority (25 percent), are paid between $20,000 and $24,999. Twenty-two percent receive between $25,000 and $29,999. An elite three percent are paid at or above $60,000.

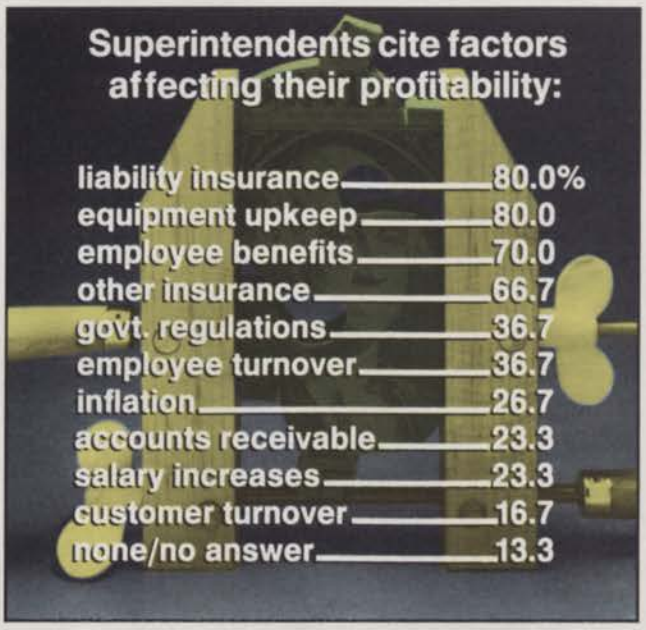
Liability insurance is one of the factors cited by superintendents as affecting profitability. It's no wonder.

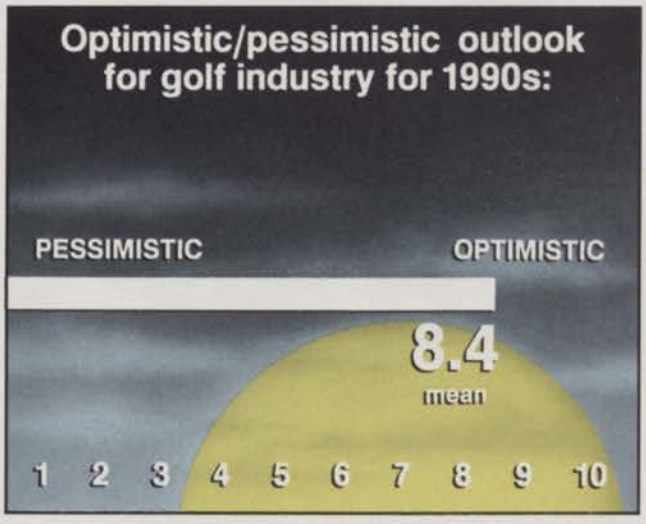
Pat Jones, director of communications for GCSAA, says liability insurance costs are rising, "especially when attached to golf cars, or things that typically might result in litigation, whether justified or not."

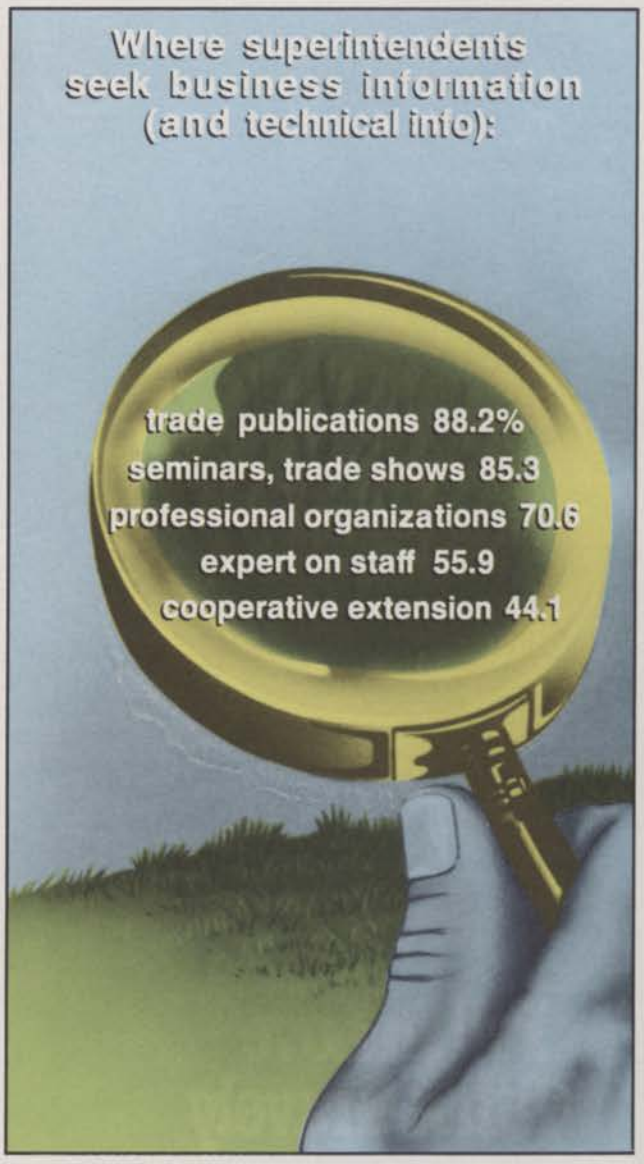
The good news on the benefit front is the coming trend toward portable pension plans, as cited by the survey.

Jones says the pension's lack of portability has been a problem in many professions. Usually, a pension must be cashed in by the employee should he change jobs. That requirement may change.

"What we and a lot of small business are working with Congress to do," Jones says, "is create a system by which employees who change jobs more frequently would be able to take their pension plans with them, like a portable IRA." **LM**






Where superintendents seek business information (and technical info):
trade publications 88.2%
seminars, trade shows 85.3
professional organizations 70.6
expert on staff 55.9
cooperative extension 44.1

For the long run.

Introducing a powerful new force in riding rotary mowers.

Now there's more to Cushman® Front Line® Mowers than top cutting performance. More power. More operator comfort. More endurance.

Now there's the new diesel-powered model Cushman 807.

Its totally integrated power train and new hydraulically-powered steering gives you unmatched performance over the long run. The 807 dispatches thick, wet grass on tricky maneuvers around obstacles without losing ground speed. No other rotary mower gives you a cleaner cut.

At the heart of the new, four-wheel 807 is a powerful 21.5 horsepower, 3-cylinder Kubota 950 diesel engine. We've also included a heavy-duty Donaldson air cleaner and a new, heavy-duty Cushman PTO clutch to keep your new Cushman Front Line running longer. A complete family of Cushman Front Lines and a wide range of accessories are available to meet all your needs all year 'round. Choose a 3 or 4 wheel design with 60- or 72-inch side or rear discharge mower deck. Or add the exclusive Cushman Grass Caddy™ system, which lets you cut, catch, and hydraulically dump 16 bushels of clippings without leaving the seat.

For a convincing demonstration contact your Cushman dealer today. Or call toll-free: 1-800-228-4444.

CUSHMAN®

BUILT TO LAST

4014 Cushman, P.O. Box 82409, Lincoln, NE 68501

Cushman, Inc. 1989. All rights reserved.

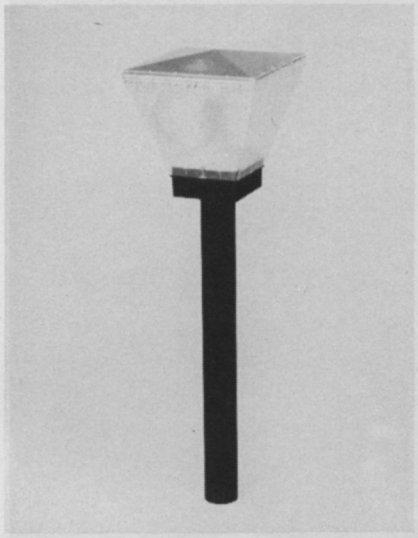
Circle No. 106 on Reader Inquiry Card

PRODUCTS

Solar-powered light is wireless, work-free

The Light Fantastic is a totally stand alone, wireless, solar-powered lighting unit. It can be adjusted to glow brightly during the evening or softly throughout the night. Light Fantastic absorbs sunlight during the day and creates a soft glow from dusk onwards.

The units can be used in groups or individually, and are easily moved



from place to place as the seasons change.

Circle No. 191 on Reader Inquiry Card

Safety wear catalog for multi-applications

Bata Shoe Co. has a new catalog available highlighting its line of industrial, waterproof protective clothing and footwear.

Bata says it has a commitment to safety excellence that begins in the research stages and continues through design and production.

Circle No. 192 on Reader Inquiry Card

Blue colorant can be used as lake dye, spray indicator

Drane Supply Co. of Louisville, Ky. has produced what it says is the first blue colorant to be labelled for use as a liquid lake dye and as a spray pattern indicator.

The product is called Aqua-Turf. Drane reports that when used in ponds, Aqua-Turf shades sunlight for the control of algae and aquatic weeds, as well as enhancing lake appearance with a natural looking blue color.

One gallon treats up to an acre of water four to five feet deep and lasts for up to several weeks.

For spray pattern indicator use, Aqua-Turf is applied at the rate of 8 to 14 ounces per acre. It leaves a temporary blue color that gives grass a deeper green appearance.

Drane says Aqua-Turf is harmless to all forms of animal and vegetable life, and does not affect the performance of any turf chemicals.

Circle No. 193 on Reader Inquiry Card

Attachment is adaptable as a scraper and loader

The D.W. Scraper is a new heavy-duty truck attachment that fits on a 3-point hitch as a scraper or end-loader.

It has two, 2½ x 18-inch cylinders controlling the bucket. The change from scraper to end-loader is accomplished by changing six bolts on each side.

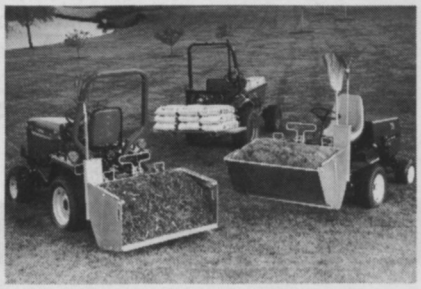
Sources say the tool can be used to finish grading around buildings, building ponds and terraces, leveling driveways and more.

Circle No. 194 on Reader Inquiry Card

New line of attachments for mowers and tractors

Attachments Plus of Spring Lake, Mich., now offers rugged, lightweight attachments for front mowers and tractors with 3-point hitches.

In less than five minutes, an operator can change from an adjustable fork set for moving balled trees to a



tote platform for transporting shrubs, or to a large half-yard hopper for hauling bark or debris.

The product line features an aluminum clam shell hopper and scoop along with a steel fork set, tote platform bracket kit and tool organizer. One person can easily change attachments thanks to quick release pins.

Circle No. 195 on Reader Inquiry Card

New nursery fabrics provide great cover

Two new non-woven fabrics are available to nurserymen as part of an expanding Agryl System of protective covers for horticulture and agri-

culture from American Agrifabrics.

Both Agryl products are soft, breatheable, non-abrasive materials available in narrow and wide widths.

Agryl P-30 is a medium weight cover at 0.9 oz./sq.yd. It offers freeze protection down to 26°F, and is recommended for late spring freezes on ferns, foliage and container stock.

Agryl P-50 is heavier, at 1.5 oz./sq.yd. Its use is recommended for harsher growing conditions, and provides freeze protection down to 24°F. American Agrifabrics says P-50 is also ideal for overwintering in single or double layers, or coupled with white poly film.

Circle No. 196 on Reader Inquiry Card

Research license available for tree tie-down system

A tie-down system for supporting newly-planted trees is available for licensing to manufacturers interested in research and development.

Safe Way Tie-Down anchors trees to promote improved growth, according to the Invention Submission Corporation (ISC). ISC says the unit allows for more attractive landscaping without unsightly stakes. Designed for optimum safety, the system eliminates the risk of stumbling over above-ground stakes and running into virtually invisible support lines.

ISC reports that the design sub-

Here's proof that Typar Pro Landscape Fabric is easier to install.

We cut this piece of Typar® Pro Landscape Fabric to show what you can't do with the others.

Like cut quick slits for plants to pass through. Or fast curves that follow landscaped contours.

Typar is easily cut, lightweight and less bulky. So it's faster and cheaper for you to install.

And it's surprisingly tougher. With rugged polypropylene fibers that resist tearing, even under stones, gravel, patios and sidewalks. Typar is also porous, so air, water and nutrients can pass right through. Your landscaping projects look healthy as well as handsome.

So save time and labor while you control weeds, drainage, soil erosion, and heaving of walks and patios.

Get Typar Pro Landscape Fabric.

And start cutting corners the easy way.

TYPAR Landscape Fabric

FOR PROFESSIONALS

REEMAY
a member of The Interfech Group, Inc.

Circle No. 145 on Reader Inquiry Card

stantially reduces the aggravation of mowing the lawn around supported trees.

Circle No. 197 on Reader Inquiry Card

Line of power tools grows; now totals 17

New product additions have been completed by EasyRake,Inc. The line now includes 17 models of dethatchers, vacuum carts and sprayers.

"Major expansion of our product line from our traditional base of high-performance dethatchers led us to take a similar step forward with appropriate changes in our product name and the development of a new-look, corporate logotype and symbol," says Jerry Jones, president.

The addition of a 40-cubic foot Model 86 and a six-bushel Model 344 lawn vacuum brings to twelve the number of self-powered tractor-mounted and trailered units.

The EasyRake Model 84 trailer-mounted sprayer features 13-gallon capacity and complements the 13-gallon tractor-mounted Model 82 and the 30 gallon trailer-mounted Model 88 for residential and commercial spraying.

Circle No. 198 on Reader Inquiry Card

New catalogues describe vacuum, blower products

Atwater Strong Inc. of Akron, Ohio, offers a new 18-page booklet detailing its various vacuums and blowers.

Trade names for Atwater products are Lo-Blo, the Air-Broom, Lit-R-Blo and Mi-T-Vac. Commercial units are used by groundskeepers, lawn care professionals, landscapers, parks, schools and cities.

Circle No. 199 on Reader Inquiry Card

Watch for improved variety of Clemfine

Bob Mazur of Clemson University is currently researching to breed an improved stand of Clemfine tall fescue in five years.

Mazur says he is not trying to replace Clemfine, but rather to incorporate additional plant characteristics to fill a new market niche.

Those characteristics are greater dwarf growth, finer leaf texture and darker color, along with Clemfine's well-known disease tolerance.

Major markets for tall fescue in the Southeast include Atlanta, Charlotte, N.C. and Birmingham, Ala. "Here at Clemson," says Mazur, we're in an ideal location to screen for improved tall fescue varieties. We've got the same climate and disease problems."

Mazur's research begins with screening plant ecotypes and selecting germ plasms from disease resistant varieties.

Circle No. 200 on Reader Inquiry Card

One-Pass Mowing & Clean-Up

Mow and power vac at the same time with Goossen's new 128 cu. ft. capacity Vac 'n' Load. It can be used with virtually any front deck or mid-mount mower, and is also ideal for fast fall leaf pickup. And when the job's done, it tilts up for easy dumping.

If you need time-saving one-pass capability, then you need to know more about Vac 'n' Load. It gets the big jobs done faster.

Ask about the convenient terms available with Goossen's all-new **TurfTeam Leasing.**

Goossen
INDUSTRIES

Call Toll-Free 1-800-228-6542 • (In Nebraska: 402-228-4226)
P.O. Box 705 • Beatrice, Nebraska 68310

Circle No. 121 on Reader Inquiry Card

COME GROW WITH US.

Take advantage of these Benefits when you join the California Landscape Contractors Association:

◗ Group Insurance ◗ Project Referrals ◗ Professional Identification ◗ Industry Contacts ◗ Trophy Awards ◗ Seminars ◗ Publicity ◗ Timely Information ◗ Educational Tools ◗ Expert Advice ◗ Advertising Aids ◗ Standard Contract Forms ◗ Political Advocacy ◗ Certification.

CLCA membership fees are surprisingly low, and they vary according to the size of your business.

CALIFORNIA LANDSCAPE CONTRACTORS ASSOCIATION
(916) 448-CLCA

Pressure washer line has variable sprayer

The Jet-Pro Model JP-3015 by Jetter Corp. has a variable pattern spray tip and two-piece wand for easy accesorizing.

Jetter says the Jet-Pro operates at

1500 psi, a full 3 gpm, and retails for hundreds of dollars less than comparable models.

Circle No. 201 on Reader Inquiry Card

Tree spade maximizes transplanting capability

Vermeer has produced what it says is the world's largest mechanized tree mover.

The 9400 Tree Spade can handle trees with a 94-inch diameter. It mounts on a truck with a minimum GVW rating of 58,000 lbs. The unit weighs 22,500 lbs., and features a heavy duty hydraulic drive system with chain reduction assist. Four spoon-shaped spades reach a depth of 65-inches. Each spade applies a digging force of 42,000 lbs. at the point. Giant anchor plates press the ball securely in position during transport.

The front of the truck bed holds approximately 450 gallons of water which lubricate the tree ball and spades while digging.

Maximum ball weight capacity is 12,000 lbs.

The tree digging and lifting opera-

tion is all hydraulically controlled from a single operator station which is located next to the spades for maximum visibility.

Circle No. 202 on Reader Inquiry Card

New wall system is mortarless

A new concrete block landscape retaining wall system has been introduced by Allan Block Corpora-

tion of Minneapolis.

According to the company, the system requires no mortar or stabilizing pins, and can be used in a wide variety of soil and site conditions for residential, commercial and municipal applications.

The secret to the system is a raised lip on the front upper edge of each block which allows blocks to interlock as they are stacked. Walls are formed by placing the first row of blocks in a shallow trench, stacking additional rows on top against the lip, and backfilling behind each row.

Allan Block retaining walls may in-

CERTIFIED INTERIOR HORTICULTURIST NCIHC

Why design professionals will take notice if you're able to use this seal.

Designers and architects appreciate professionalism and competence . . . and this seal says that interior landscapers who are authorized to use it are professional in every sense of the word. Scores of interior plantscape leaders are now qualified to use this seal. If you'd like information on how to qualify to become a Certified Interior Horticulturist write **National Council for Interior Horticultural Certification,** 115 Abbot Street, Andover, MA 01810 (617) 475-4433.

"All-In-One MIG Welding Package"

The Millermatic® 200 gives you everything you need for gas metal arc (MIG) welding in one convenient unit.

- Easy to use — Constant voltage, dc power source with built-in wire feeder and gun, operates from single phase power.
- Ratings — 200 amperes, 28 volts, 60% duty cycle.
- Features — High/low range, six position heat selector switch, external polarity reversing capabilities.
- Adjustable — Wire feed adjusts from 60 IPM to 585 IPM.

Call your Miller Distributor, in the Yellow Pages ("Welding Equipment & Supplies"). Or write Miller Electric Mfg. Co., P.O. Box 1079, Appleton, WI 54912.

Miller®

Circle No. 134 on Reader Inquiry Card

corporate inside and outside curves, multi-levels, landscaping pockets, angles, corners and stairs. Blocks are available in a variety of colors.

According to designer and company founder Robert Gravier, Allan Block has the durability of landscape boulders or stone, but without the weight and difficult installation.

Circle No. 203 on Reader Inquiry Card

Goosegrass is a goner from bermudagrass turf

Sencor 75 Turf Herbicide from the Mobay Corporation is reported to be highly effective in the control of goosegrass in actively growing Bermudagrass turf.

Applied prior to green up per label directions, Sencor 75 will also effectively control such broadleaf weeds as common chickweed, corn speedwell, henbit, parsley-piert and spur weed.

It mixes with water and may be applied with any conventional tank type sprayer. Mobay says that usually, one application, and never more than two, will provide season-long control.

Circle No. 204 on Reader Inquiry Card

Clipping pickup made easy thanks to new deck design

A new "top flow" deck design for the Cushman Front Line mower vastly improves the collection of clipping and debris when mowing.

The new deck features a grass propulsion impeller as an integral part of the deck design. The replaceable impeller blade operates on the same

spindle as the right-hand cutting blade.

According to Cushman engineers, most grass collection systems rely on air drawn in from under the edges of the mower deck. The "top flow" deck is designed with air inlet passages that allow positive air flow even when the mower is operated low to the ground in wet turf.

A tunnel-shape provides an open, straight path for clippings and debris. This, says Cushman, minimizes the chance of plugging from twigs, pine cones or other types of debris.

Circle No. 205 on Reader Inquiry Card

Broad spectrum control, no residual soil activity

Roundup herbicide from Monsanto controls more than 110 kinds of emerged weeds, roots and all. If you've needed more than one herbicide in the past to control weed problems, Monsanto says Roundup can help.

Roundup works in the plant and not in the soil. That, according to Monsanto, means it has no residual soil activity, so it won't wash or leach out to harm nearby desirable vegetation.

It is ideal for trimmning and edging around shrubs and flower beds, around trees and other valuable ornamentals.

Circle No. 206 on Reader Inquiry Card

New lineup of mowers features many widths

Dixon Industries, Inc. has presented its 1990 Zero Turning Radius riding lawn mowers. They range in size from the ZTR-304 with a 30-inch cut to the surprisingly compact commercial grade ZTR-502.

Speed, steering and direction are controlled by two hand levers. The 30-inch, 36-inch and 42-inch models rely on Dixon's patented transaxle.

The ZTR-502 features a piston-type hydrostatic drive, an 18-hp Kohler engine and a special patented suspension to reduce vibration.

The narrow swaths of the ZTR-304 and the ZTR-312 permit these 30-inch cut mowers to move freely in close-planted areas.

Circle No. 207 on Reader Inquiry Card

New utilitruck is now here for the new year

Columbia ParCar Corporation introduces the 1990 Columbia Utilitruck.

"With a Wells Cargo Behind... You Never Look Back"

28 FT. WELLS CARGO EXPRESS WAGON

ALL YOUR GEAR...
SECURE, ORGANIZED AND READY TO ROLL

We can say, "We build the best". Our specifications sheets will back that up. But why else should you consider Wells Cargo? How about:

- Factory Service Facilities - GA, IN, TX, UT.
- US Wide Dealer & Service Network.
- A Product Designed & Built for 15 Yrs. Hard Service, and More.
- Second-to-None 3 Yr. Warranty Coverage.
- Full Line Ball-Hitch Units 6" – 32" and Up.
- Full Line Fifth Wheel Units 20' – 40' and Up.

CATALOGS
SPECIFICATIONS
CALL
1-800-348-7553
SAY YOU SAW IT IN LANDSCAPE MGT.

WELLS CARGO SINCE 1954

WELLS CARGO, INC. P.O. BOX 728-837 ELKHART, IN 46515

Circle No. 164 on Reader Inquiry Card

WE REACH THE PEOPLE YOU NEED TO REACH!

Place a classified ad in any of these EDGELL COMMUNICATIONS' publications and you know your ad dollar is wisely spent.

Circulation	Magazine	Circulation	Magazine
22,587	AFTERMARKET BUSINESS	47,780	LANDSCAPE MANAGEMENT
13,252	AMERICAN AUTOMATIC MERCHANDISER	13,589	LAWN CARE INDUSTRY
135,134	AMERICAN SALON	15,209	LP/GAS
12,821	AQUA	17,322	MEAT PROCESSING
29,475	BEVERAGE INDUSTRY	14,496	NEUROLOGY
10,484	BODY FASHIONS/INTIMATE APPAREL	15,686	OPHTHALMOLOGY TIMES
3,119	CANDY INDUSTRY	13,797	PAPERBOARD PACKAGING
11,247	CANDY MARKETER	12,889	PAPER SALES
50,381	COMMUNICATIONS NEWS	16,335	PEST CONTROL
20,469	CONCRETE PRODUCER NEWS	19,656	PETROLEUM ENGINEER INTERNATIONAL
102,224	DENTAL MANAGEMENT	14,105	PETS SUPPLIES MARKETING
7,084	DERMATOLOGY TIMES	24,044	PIPELINE & GAS JOURNAL
12,777	DRUG & COSMETIC INDUSTRY	21,672	PIT & QUARRY
35,707	DVM NEWSMAGAZINE	10,100	POULTRY PROCESSING
24,546	FLOORING	20,281	ROOFING/SIDING/INSULATION
77,365	FOOD & DRUG PACKAGING	9,369	SNACK FOOD
62,170	FOOD MANAGEMENT	41,293	TELEPHONE ENGINEER & MANAGEMENT
19,051	HEARING INSTRUMENTS	9,056	UROLOGY TIMES
45,148	HOTEL & MOTEL MANAGEMENT	21,000	WORLD COGENERATION
13,833	HOUSEWARES		

Don't forget that classified advertising works just as effectively in locating employees as it does if you are looking for a position, have a line, machinery or a business to sell, are seeking representatives or wish to buy a specific item. Let it go to work for you!

EDGELL COMMUNICATIONS does a better job of reaching those who count (*your potential customers*) than any other business publisher.

COUNT ON US TO REACH THOSE WHO COUNT!

Call Dawn Nilsen at 218-723-9200
Fax: 218-723-9615

EDGELL COMMUNICATIONS
One East First Street
Duluth, Minnesota 55802

J

Speed-balanced rack and pinion steering enhance maneuverability and steering efficiency. The front of the truck is made of metton, a synthetic plastic, for durability and versatility. The redesigned rear steel body has a flatbed of aluminum plating, steel sides and tailgate, and a gross carrying capacity of 1000 lbs. The vehicle is available in both gas and electric models.

Columbia ParCar Corporation says the Utilitruck is perfect for light industry, agriculture and turf care.

The Utilitruck is a rugged, all-purpose vehicle, and may be customized to fit any of your special needs.

Circle No. 208 on Reader Inquiry Card

Tough on weeds, gentle on grass

Acclaim 1EC herbicide from Hoechst-Roussel Agri-Vet Company is tough on grassy weeds, yet gentle on cool season turfgrasses. Acclaim can be used when no pre-emergence product can because it controls weeds after they have germinated.

The produce controls or suppresses crabgrass, goosegrass, barnyardgrass, foxtail sp., panicum sp., Johnsongrass and sprangletop. Acclaim is cleared for use on turfgrass, Kentucky bluegrass, perennial ryegrass, fine fescue, tall fescue, annual bluegrass, zoysiagrass and bentgrass.

Circle No. 209 on Reader Inquiry Card

New line of grass cutters ready for springtime

Simplicity Manufacturing, Inc. has introduced a complete line of commercial grass cutting machines. The line includes six riding models, two mid-size walk-behinds and two trim mowers.

"The front cut models feature a zero-turning radius that gives operators great maneuverability around and under obstacles common to parks, building sites and large rural lots," says Warren Frazier, president and chief executive officer.

A patented hydro steering design features dual hydrostatic drive that allows the units to pivot in a full circle

around either drive wheel. Models are available with a lever or exclusive steering wheel design. Moving the steering wheel 40° turns the units a full-360°.

Options include dual tail wheels and grass catchers.

Circle No. 210 on Reader Inquiry Card

High performance engines power commercial mowers

The Toro Company has added two new high performance Kohler en-

Remove Unwanted Litter!

Olathe

Model 41MVS Large Area Sweeper

Combination vacuum and mechanical sweeper will pick up grass clippings, leaves, cans and other debris in wet or dry conditions. 7 cu. yd. hopper.

Call Your Nearby Olathe/Toro Dist. For Demo!

100 Industrial Parkway
Industrial Airport, KS 66031
800-255-6438
913-782-4396

Reduce Bulky Brush!

Olathe

Model 12 3-Pt. Hitch Chipper

PTO powered chipper reduces brush & limbs to a mulch chip. Features 7" diameter capacity, spring loaded throwout clutch which stops the feed instantly, and a 500 lb. cutter drum.

Call Your Nearby Olathe/Toro Dist. For Demo!

100 Industrial Parkway
Industrial Airport, KS 66031
800-255-6438
913-782-4396

For Heavy-Duty Renovation!

Olathe

Model 84 Self-Propelled Slit Seeder

Over 2,000 units in the field providing precision slit seeding with 18 HP engine, Olathe "Shatter Blades" for less power requirements & longer wear, remote seed shutoff & Olathe dependability!

Call Your Nearby Olathe/Toro Dist. For Demo!

100 Industrial Parkway
Industrial Airport, KS 66031
800-255-6438
913-782-4396

Circle No. 140 on Reader Inquiry Card

Avoid Running Into Problems.

Announcing a turning point in mower history. The Reelmaster® 216 from Toro. It's nimble. Lightweight. And extremely maneuverable. Perfect for mowing around trees, signs, any obstacle standing in your way. And perfect for formal mowing and cutting on slopes.

For added performance, traction and versatility, the Reelmaster 216 features 3-wheel drive. Plus quick-adjusting height of cut. Options include grass catchers and a choice of front rollers that let you adapt easily to varying needs.

The Reelmaster 216 is so easy to operate that anyone can become an expert on the first ride. One lever controls the cutting reels. One pedal controls the forward and reverse speeds and the braking. It's that simple.

For all-purpose mowing, there's nothing as agile as the Reelmaster 216 from Toro. It's a great way to steer clear of trouble. For a demonstration, call your local distributor or contact Toro at the address below.

TORO

The Professionals That Keep You Cutting.

"Reelmaster" and "Toro" are registered trademarks of The Toro Company. ©1989 The Toro Company. Commercial Marketing Services, 8111 Lyndale Av. So., Minneapolis, MN 55420

Circle No. 158 on Reader Inquiry Card

BOOKSTORE

010 - ADVANCES IN TURFGRASS PATHOLOGY
by Joyner and Larsen
Leading U.S. turf pathologists report on turfgrass diseases, pythium blight, snow molds, fairy rings, leaf spot of Kentucky bluegrass in Minnesota, initial and field fungicide screening, turfgrass disease resistance, etc. Contains new ideas on how to combat turfgrass problems. **$27.95**

235 - LAWN CARE: A HANDBOOK FOR PROFESSIONALS
by H. Decker, J. Decker
Written by turfgrass professionals, this handy guide will be invaluable for playing field managers, golf course managers, or any lawn care practitioner. Covers all aspects of turfgrass management. **$36.00**

645 - MANAGEMENT OF TURFGRASS DISEASES
by J.M. Vargas
Identifies turfgrass diseases by description and illustration. Includes a holistic approach to healthy turf and lawns. Presents practical management strategies for golf courses, lawns and athletic fields. 204 pages, illustrated. **$26.70**

620 - TURF MANAGEMENT HANDBOOK
by Howard Sprague
Practical guide to turf care under both healthy and poor turf conditions. Chapters cover turf in cooler and warmer regions, fertilizer use, regular turf care, weed and disease control and special turf problems. Useful seasonal schedules for management of turf areas. **$25.25**

220 - CONTROLLING TURFGRASS PESTS
by Shurtleff, Fermanian, Randell
New comprehensive guide provides the most up-to-date information available on the identification, biology, control and management of every type of turfgrass pest. **$36.00**

640 - TURF IRRIGATION MANUAL
by James Watkins
A guidebook for engineers, architects, designers and contractors. Keeps pace with the latest developments in turf and landscape irrigation. Specific chapters devoted to rotary sprinkler design systems. Golf course design systems and expanded engineering and reference material. **$27.25**

630 - TURFGRASS: SCIENCE AND CULTURE
by James Beard
Comprehensive basic text and reference source used in many leading university turf programs. Includes findings of current research compiled from more than 12,000 sources. **$42.00**

110 - TURF MANAGERS' HANDBOOK-Second Edition
by Daniel and Freeborg
ENTIRELY UPDATED. A practical guide for the turf practitioner. Chapters on grasses, growth regulators and diseases have had extensive modification. Innovations resulting from research and practice have been added to reflect the current techniques available for turf managers. **$32.95**

230 - LAWNS-Third Edition
by Dr. Jonas Vengris and Dr. William A. Torello
Designed as a textbook or a practical usage manual, this book has been completely brought up-to-date. Care of lawns and turfgrass, from selection of varieties to maintenance of established grass is completely covered. **$25.95**

225 - TURFGRASS MANAGEMENT
by A.J. Turgeon
Revised edition. Covers the latest developments in turfgrass science and technology. Heavily illustrated with dozens of new drawings. Provides specific recommendations for applying the newest pesticides, fertilizers and other materials to combat turfgrass problems. A valuable reference for diagnosing problems and determining their causes. **$42.00**

615 - TURF MANAGEMENT FOR GOLF COURSES
by James Beard
Written by an eminent turfgrass researcher, this USGA sponsored text is an ideal reference and "how to" guide. Details all phases of golf course design and construction, turf management, course administration, irrigation, equipment and disease and pest control. Fully illustrated. **$52.75**

410 - DISEASES & PESTS OF ORNAMENTAL PLANTS
by Pascal Pirone
This standard reference discusses diagnosis and treatment of diseases and organisms affecting nearly 500 varieties of ornamental plants grown outdoors, under glass or in the home. Easy to understand explanations of when and how to use the most effective fungicides, insecticides and other control methods. **$37.95**

415 - INNOVATIVE APPROACHES TO PLANT DISEASE CONTROL
by Ilan Chet
Brings together alternative approaches and methods that have potential to control diseases caused by fungi, bacteria and viruses. Major concepts of disease control discussed include biological control systems, their possible mechanisms, potential application and genetic improvement. **$52.50**

800 - THE GOLF COURSE
by Cornish and Whitten
The first book ever to give the art of golf course design its due, and golf course architects the credit and recognition they deserve. 320 pages and 150 color and black and white photographs. Traces the history and evolution of the golf course, analyzes the great courses, shows how they were designed and constructed. **$35.00**

690 - INSECTS THAT FEED ON TREES AND SHRUBS
by Johnson and Lyon
Essential information for identifying more than 650 insect pests and the injuries they cause. More than 200 color illustrations. **$49.95**

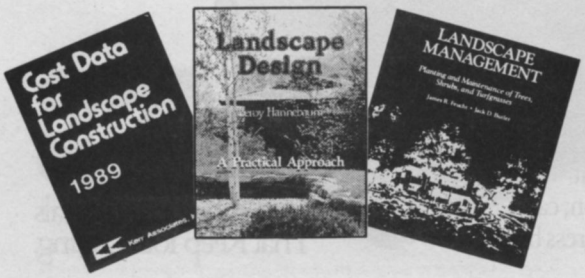
500 - THE 1989 PESTICIDE DIRECTORY
by Lori Thomson Harvey and W.T. Thomson
A Guide to Producers and Products, Regulators, Researchers and Associations in the United States. For the person who needs to know anything in the United States pesticide industry. **$75.00**

510 - HORTUS THIRD
from Cornell University
A 1,300 page concise dictionary of plants cultivated in the United States and Canada. A reference which every horticulture professional should have. **$135.00**

810 - LIABILITY AND LAW IN RECREATION, PARKS AND SPORTS
by Ronald A. Kaiser, J.D.
A fact-filled reference that all recreation professionals should have to steer clear of lawsuits resulting from athletic and recreation participant injuries. Uses layman's terms and an analysis of crucial court cases to provide you with a host of recommendations and risk management guidelines. **$33.00**

125 - SCIENTIFIC GUIDE TO PEST CONTROL OPERATIONS
by G.W. Bennett, J.M. Owens, R.M. Corrigan
Fourth Edition. New chapters on fumigation, urban wildlife, special facilities, plus updated, improved chapters on pesticides, cockroaches, birds, termites, equipment, sanitation, stored product pests and more. Don't be without this updated edition.
$49.95 Domestic All Others $60.00

Diseases & Pests of Ornamental Plants 5th Ed.
Pascal P. Pirone
THE GOLF COURSE
HORTUS THIRD
A Concise Dictionary of Plants Cultivated in the United States and Canada
INNOVATIVE APPROACHES TO PLANT DISEASE CONTROL
Edited by ILAN CHET
LIABILITY & LAW IN RECREATION, PARKS & SPORTS
RONALD A. KAISER
THE 1989 PESTICIDE DIRECTORY
Pest Control Operations



345 - COST DATA FOR LANDSCAPE CONSTRUCTION 1989
Kathleen W. Kerr, Editor
An updated unit cost data reference for designers and cost estimators. Developed to fill the tremendous need for detailed landscape construction cost data. Laid out in easy-to-use CSI format. Annual. **$35.00**

300 - LANDSCAPE DESIGN: A PRACTICAL APPROACH
by Leroy Hannebaum
Geared for the commercial designer/salesperson, this is a one-stop guide to the landscape design process. Covers the entire highly competitive field including design analysis techniques, pointers on land forms, specialized business landscaping methods, environmental design guidelines, specifications, estimations, bids. **$41.00**

305 - LANDSCAPE MANAGEMENT
by James R. Feucht and Jack D. Butler
Planting and Maintenance of Trees, Shrubs, and Turfgrasses. Describes the basic principles of cultural management of installed landscapes. The important factors of plant growth, soils and fertilizers, improved planting techniques and new pruning techniques, integrated pest and disease management, and spray-equipment calibration and care are all featured. **$29.95**

BOOKSTORE

370 - LANDSCAPE OPERATIONS: MANAGEMENT, METHODS & MATERIALS
by Leroy Hannebaum
An in-depth examination that combines technical training in landscape science with methods of accounting, business management, marketing and sales. Discusses effective methods for performing lawn installations, landscape planting and maintenance. Step-by-step accounting calculations are explained in simple terms. **$38.00**

365 - LANDSCAPE PLANTS IN DESIGN
by Edward C. Martin
An annotated photographic guide to the design qualities of ornamental plants and their aesthetic and functional use in landscape designing. Over 600 trees, shrubs, vines, ground covers and turfgrasses are described in nontechnical language. Over 1900 photographs. Provides a basis for selecting the best plant materials for any particular use in landscape design. Contains detailed indexes that provide quick reference to particular design qualities and growing conditions. **$58.95**

375 - RESIDENTIAL LANDSCAPES
by Gregory M. Pierceall
An excellent reference for individuals involved in the design and development of plantings and constructed features for residential sites. Illustrations and actual residential case study examples are used to communicate graphic, planning and design concepts which are the focus of this text. **$43.00**

665 - ARBORICULTURE: THE CARE OF TREES, SHRUBS AND VINES IN THE LANDSCAPE
by Richard W. Harris
Provides comprehensive coverage of complete planting, site analysis, preparation and special planting methods, fully detailed coverage of fertilization, irrigation and pruning guidelines on preventative maintenance, repair and chemical control, how-tos of diagnosing plant problems, practical data on non-infectious disorders, diseases, insects and related pests and pest management. **$56.00**

400 - NATIVE TREES, SHRUBS, AND VINES FOR URBAN AND RURAL AMERICA
by Gary L. Hightshoe
This award-winning reference to native U.S. plants has now been expanded to include shrubs and vines. Over 250 major species are characterized by form, branching pattern, foliage, flower, fruits, habitat, soil, hardiness, susceptibility, urban tolerance and associate species. Includes unique color-coded keys that classify plant species by visual characteristics, cultural requirements and ecological relationships. **$79.95**

720 - SHRUB IDENTIFICATION
by George Symonds
Pictorial key to identify shrubs. Contains more than 3,500 illustrations to check specimens. Popular and botanical names are given for each shrub and handy index tabs for quick reference.
$12.95 paperback

750 - TREE IDENTIFICATION
by George Symonds
Pictorial reference to identifying trees by checking leaves, buds, branches, fruit and bark. Like its sister publication, SHRUB IDENTIFICATION, popular and botanical names are listed with index tabs for easy reference.
$14.95 paperback

755 - TREE DETAILING
by Michael Littlewood
A compendium of practical information on all aspects of tree planting and maintenance. 10 chapters deal with tree stock and sizes, planting techniques, pruning and surgery, protection of new trees and existing trees, maintenance and management, survey and evaluation. **$32.95**

760 - TREE MAINTENANCE
by Pascal Pirone
The fourth edition of this guide for anyone involved in the care and treatment of trees. Special sections on tree abnormalities, diagnosing tree troubles, non-parasitic injuries and assessing the suitability of different trees. **$49.50**

405 - WOODY ORNAMENTALS
by Partyka, Joyner, Rimelspach, Carver
Illustrates plant identification characteristics. Organized in two basic sections: plant identification and plant disorders, this text utilizes 430 color photos, 430 line drawings and 45 black and white photos to simplify identification.
$32.50

ARBORICULTURE
Care of Trees, Shrubs, and Vines in the Landscape
Richard W. Harris
Native Trees, Shrubs, and Vines for Urban and Rural America
A Planting Design Manual for Environmental Designers
Gary L. Hightshoe
THE SHRUB IDENTIFICATION BOOK
George W.D. Symonds
TREE DETAILING
MICHAEL LITTLEWOOD

NEW! Instructional Videos!

01 - PROFESSIONAL SOD LAYING TECHNIQUES - 25 minutes - Color - VHS - $85.00
"How-to" video featuring step-by-step guidelines for installing sod professionally. Illustrated reference guides and group study materials included.

02 - PLANTING AND STAKING LANDSCAPE TREES - 20 minutes - Color - VHS - $85.00
Award-winning infield demonstration video covers the key steps of planting landscape trees. Illustrated reference guides and group study materials included.

03 - SUCCESS WITH BEDDING PLANTS - 25 minutes - Color - VHS - $85.00
Shares those "tricks of the trade" used by national award-winning professionals. Shows how to select, install and maintain bedding plants successfully. Illustrated reference guides and group training materials included.

04 - WORKING WITH PESTICIDES - 2 45 minute videos - Color - VHS - $143.95
This video safety course covers Pesticide Labels, In-field Clothing & Equipment, How to Be Prepared for a Spill, Tips on Mixing and Calibrating Pesticides and more.

05 - PROFESSIONAL TURF MANAGEMENT - 30 minutes - Color - VHS - $85.00
Examines nine major warm and cool season turf varieties. Optimum mowing heights and cutting frequency are given each turf variety. Illustrated reference guides and review test included.

06 - LANDSCAPE IRRIGATION, Maintenance and Troubleshooting 30 minutes - Color - VHS - $85.00
Step-by-step instructional video for infield employees covering Sprinkler Heads/Drip Emitters, Electrical/Manual Valves, Backflow Prevention Devices, Controller Operation and more. Illustrated handbook included.

07 - PLANT PROPAGATION - 2 25 minute videos - Color - VHS - $85.00 each
Volume One covers four important methods of propagation: by seed, division, bulbs and tubers and micropropagation. Volume Two covers three additional techniques of propagation: cuttings, layering and grafting and budding. Study guides included.

08 - ELEMENTS OF PRUNING - 30 minutes - Color - VHS - $89.95
Available in English or Spanish. Best-selling video developed for entry level industry training presents in-the-field demonstrations of The Techniques of Thinning Out Pruning, How to Control and Direct Plant Growth by Selective Pruning, How to Prevent In-Field Injuries and more. Illustrated reference manual and reproducible group study guides included.

Mail this coupon to: Book Sales, Edgell Communications
One East First Street, Duluth, MN 55802

Name _____

Street Address _____

P.O. Box Number _____

City/State/Zip _____

Phone Number ( ) _____

Purchase Order Number _____

Signature _____ Date _____

Please send me the following books. I have enclosed payment* for the total amount.
Please charge to my Visa, MasterCard or American Express (circle one)

Account Number _____ Expiration Date _____

BOOK NUMBER AND TITLE	QUANTITY	PRICE	TOTAL PRICE

Domestic—*Please add $3.00 per order plus $1.00 per additional copy for postage and handling.

All others—*Please add $5.00 per order and if ordering multiple copies, also add $2.00 per additional copy to cover postage and handling.

_____ (postage & handling)

Please allow 6-8 weeks for delivery.
Prices subject to change.
Quantity rates available on request.

_____ Total Enclosed

Questions? Call 218-723-9471 or 9472 LM

gines to its ProLine mid-size mowers. The engines are a 14-hp OHV Command and 16-hp Magnum Twin. Both are available with 36-, 44- and 52-inch deck options.

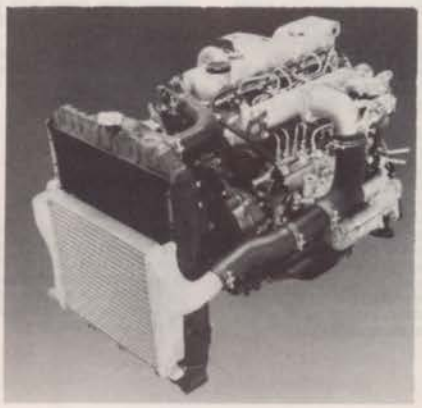
Toro says the Kohler Command 14-hp OHV engine provides extra cutting power for tough mowing applications. It features full pressure lubrication and hydraulic valve lifters for long life. Laminated steel packaging and a large multi-chambered muffler decrease engine noise. An optional electric start kit is available.

The Magnum 16-hp twin cylinder engine features excellent torque for extra lugging power in tough cutting conditions. More than two acres/hour can be mowed with the 52-inch deck. Other improvements for 1990 include: low profile 5-gallon gas tank; a shorter handle for easier storage and trailering; and a new 4-speed transmission with sealed bearings for longer life.

Circle No. 211 on Reader Inquiry Card

Direct-injection engine powers two truck models

A Mitsubishi 4D31-OAT2 intercooled, turbocharged, direct-injection diesel engine is rated at 127-hp. It powers the



new 11,600 lb. GVW Mitsubishi FUSO Intercooler truck model FE 434, and the 13,500 lb. GVW FE-HD 444. Peak torque of the in-line, four-cylinder engine is 214 lb./ft. at 2000 rpm.

Circle No. 212 on Reader Inquiry Card

Lower-priced greensmower is packed with features

The John Deere 22R greensmower is propelled by a split drive system with

two aluminum traction rolls. The 22-inch greensmower is powered by a 3.6-hp Kawasaki 4-cycle engine.

A 5-inch-diameter 9-blade reel and 3mm hardened steel bedknife cut to 5/32 inch. An optional 2.5mm tournament bedknife cuts to 1/8 inch.

Circle No. 213 on Reader Inquiry Card

Out of the Rough and Into the Green with FINN

A winning golf course is one with top-notch landscaping. Finn gets you off to the right start with its line of quality equipment. And after your course is up and running, Finn equipment continues to work year round.

Versatile Finn HydroSeeders™ easily seed everything from roughs to bunkers, the banks of lakes, and along cart paths and roadsides. Our Mulch Spreaders finish the job quickly and inexpensively with their easy operation and efficient distribution of mulch.

Once the course is in operation, HydroSeeders™ are perfect for routine maintenance. Re-seed in spring; water in summer; feed in the fall, and quickly clean up equipment all year.

All Finn equipment features the most comprehensive customer support and after-sale service in the industry. So go with Finn and make your golf course a winner.

For all the facts about Finn's complete line of landscaping, reclamation and erosion control equipment call or write us today. Leasing plans available.

Phone (513) 874-2818
Toll Free (800) 543-7166 • FAX (513) 874-2914
9281 LeSaint Drive, Fairfield, Ohio 45014

FINN CORPORATION
The Choice of Professionals

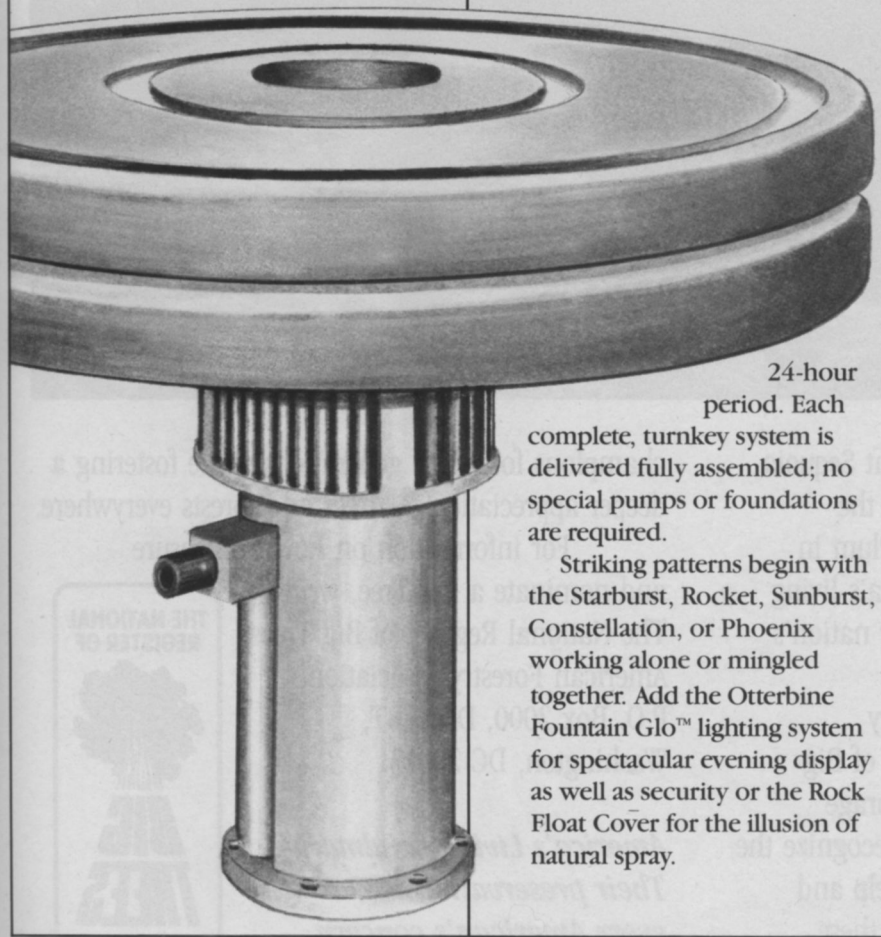
Circle No. 118 on Reader Inquiry Card

Troubled waters?

Otterbine Aerators

The prescription for troubled breathing, poor circulation, and changing temperatures in ponds and lakes is practical engineering that is esthetically pleasing.

These aerators range in power, circulating from 600,000 to 20 million gallons of water in a 24-hour period. Each complete, turnkey system is delivered fully assembled; no special pumps or foundations are required.



Striking patterns begin with the Starburst, Rocket, Sunburst, Constellation, or Phoenix working alone or mingled together. Add the Otterbine Fountain Glo™ lighting system for spectacular evening display as well as security or the Rock Float Cover for the illusion of natural spray.

Otterbine Aerators meet the water management needs of golf courses, parks, recreational lakes, office developments, and residential condominiums. Call or write for more information:

Barebo Inc.
R.D. 2, P.O. Box 217
Emmaus, PA 18049

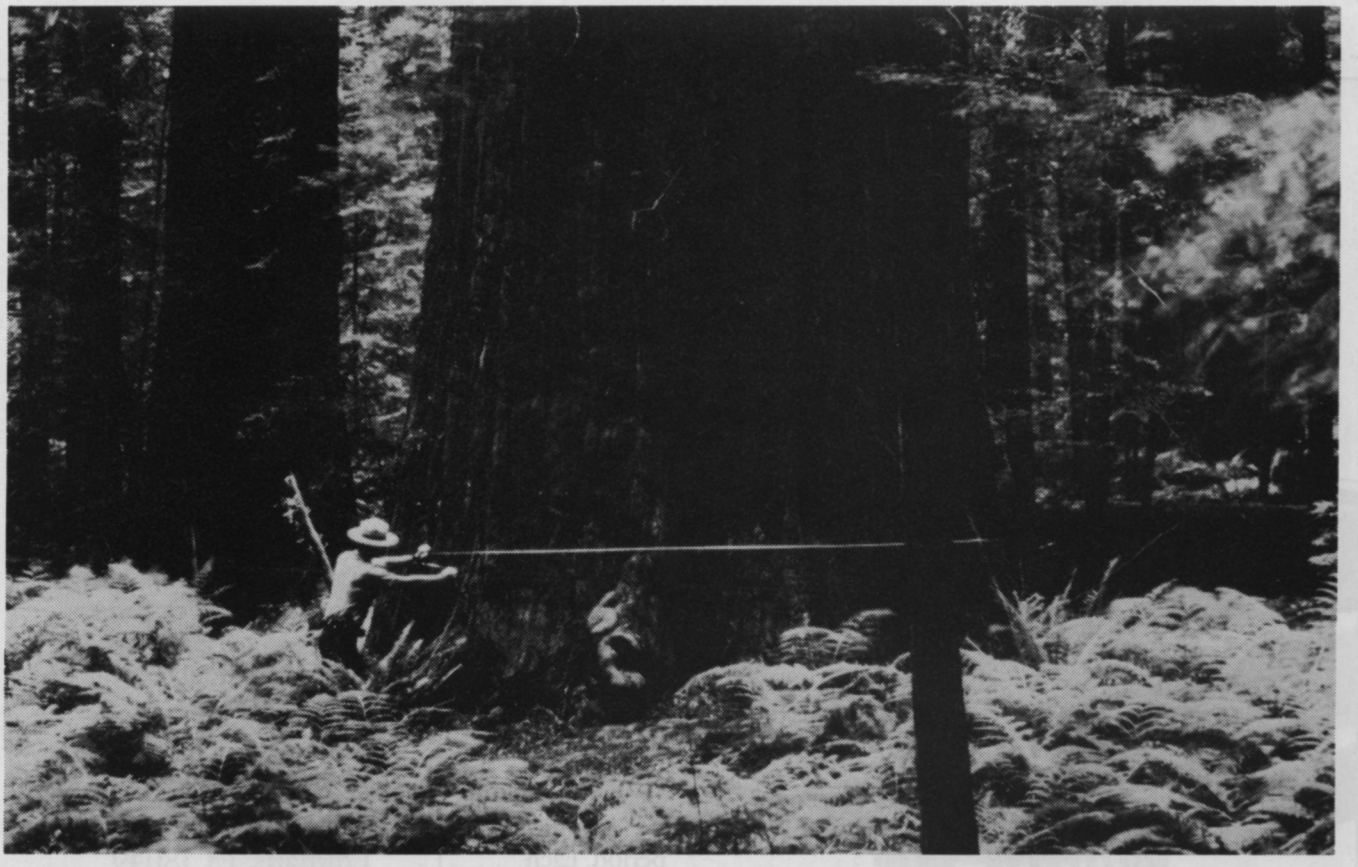
215/965-6018

OTTERBINE® BAREBO, INC.

"See us at GCSAA show, Booth No. 3632-35."

Circle No. 102 on Reader Inquiry Card

Recognize America's Living Landmarks



From the towering 275-foot Giant Sequoia in California's Sequoia National Park to the relatively diminutive 20-foot Allegheny Plum in Virginia's Blue Ridge Mountains, America's living landmarks are an invaluable part of our nation's natural heritage.

That's why the American Forestry Association began The National Register of Big Trees in 1940. Today, as then, we encourage citizens across the country to find and recognize the largest tree of each species. With your help and participation, we can locate and protect these champions for future generations while fostering a deeper appreciation for trees and forests everywhere.

For information on how to measure and nominate a Big Tree, write: The National Register of Big Trees, American Forestry Association, P.O. Box 2000, Dept. BT, Washington, DC 20013.

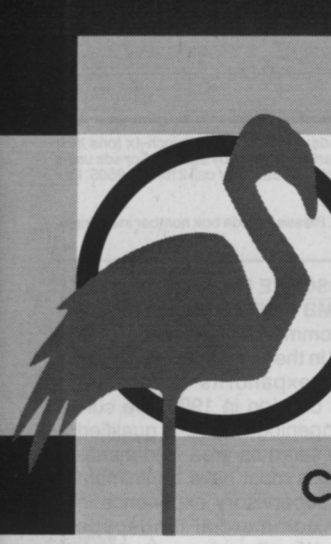
America's Living Landmarks. Their preservation is every American's concern.

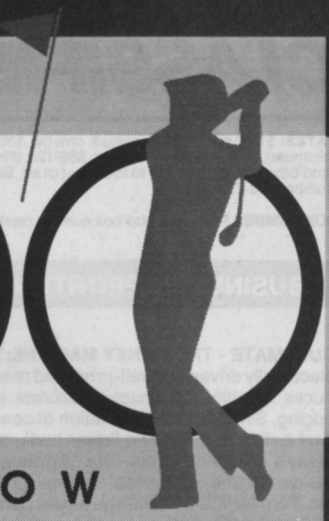
THE NATIONAL REGISTER OF BIG TREES

GCSAA '90

ORLANDO

CONFERENCE & SHOW



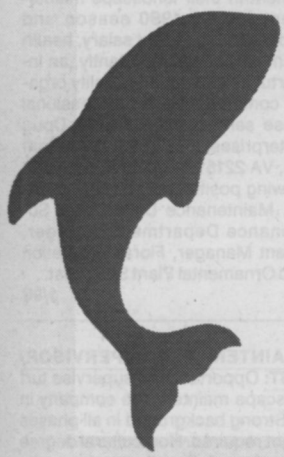


Join us for the

61st INTERNATIONAL GOLF COURSE CONFERENCE & SHOW

February 19-26, 1990
Orange County Convention/Civic Center
Orlando, Florida

- *TRADE SHOW*
- *GOLF CHAMPIONSHIP*
- *GCSAA ANNUAL MEETING*
- *EDUCATIONAL SEMINARS*



For conference, seminar or exhibitor information:
800/472-7878 or 913/841-2240

1617 St. Andrews Drive
Lawrence, Kansas 66047-1707

GOLF COURSE SUPERINTENDENTS ASSOCIATION OF AMERICA

Circle No. 120 on Reader Inquiry Card

CLASSIFIEDS

RATES: $1.20 per word (minimum charge, $35). Bold face words or words in all capital letters charged at $1.45 per word. Boxed or display ads: $100 per column inch-1x (one inch minimum); $95-3x; $90-6x; $85-9x; $80-12x. (Frequencies based on a calendar year). Agency commissions will be given only when camera-ready art is provided by agency. For ads using blind box number, add $15 to total cost of ad. Send ad copy with payment to Dawn Nilsen, LANDSCAPE MANAGEMENT, 1 East First Street, Duluth, MN 55802 or call 218-723-9505. Fax Number 218-723-9615.

BOX NUMBER REPLIES: Mail box number replies to: LANDSCAPE MANAGEMENT, Classified Ad Department, 1 East First St., Duluth, MN 55802. Please include box number in address.

BUSINESS OPPORTUNITIES

CURBMATE - THE MONEY MACHINE: Patented, electrically driven and self-propelled machine produces beautiful continuous concrete landscape edging. Simplifies the installation of concrete borders between lawns and flower beds, along driveways and sidewalks, etc. Applications for residential and commercial settings, golf courses, etc. Turn $5,000-$10,000 equipment purchase into $50,000-$100,000 potential annual income. (801)273-3938. 1/90

LEARN Professional Landscaping and Gardening at home. Accredited program provides thorough training in all phases of commercial and residential landscaping. Certificate awarded. Free booklet describes program and opportunities in detail. Lifetime Career Schools, Dept. A-415, 2251 Barry Ave., Los Angeles, CA 90064. 9/90

WANT TO BUY OR SELL A GOLF COURSE? Exclusively golf course transactions and appraisals. Ask for our catalog. McKay Golf and Country Club Properties, 15485 N. East Street, Lansing, Michigan 48906. Phone (517)484-7726. TF

CONNECTICUT AND NORTHEAST: Selling or buying a green industry business? I'm a specialist in your field with over ten years experience and can locate buyers and sellers. Phil Nilsson (203)621-6199. 1/90

HELP WANTED

TAKE ADVANTAGE OF THE OFF SEASON! Remember how it was last spring trying to find the right people. We have foremen, supervisors, managers, irrigators, architects, etc. Let us prescreen, send you resumes and set up interviews. Call Amigos today (214)634-0500. 3/90

LANDSCAPE MAINTENANCE - SUPERVISOR: Opportunity for experienced, highly motivated individual to join an established, award winning landscape company in the San Francisco Bay Area. Send resume in confidence to: Wayne Richards, Cagwin & Dorward, 8001 Binford Road, Novato, CA 94948. 1/90

PARKS SUPERVISOR $32,240-$45,822 -- Directs & coordinates the work of supv. level staff which provides care and maint. of all parks, special facilities and public grounds for 1 geographic section of the City. Req. 3 yrs. of mgmt. level exp. with extensive knowledge of park and/or landscape maint., practices and standards. To request application, call (602)262-6277 or write: City of Phoenix, Personnel Dept., 135 N. 2nd Ave., Phx., AZ 85003. AA/EEO/H Employer. 1/90

"Consider all of your employment options in the irrigation and landscape industries. Call **Floraper-sonnel,** the international employee search firm for the ornamental horticulture industry. Completely confidential. Employer pays fee. **Floraperson-nel,Inc.,** P.O. Box 1732, 1450 S. Woodland Blvd., Suite 201, DeLand, FL 32721-1732. (904)738-5151. Jim Bambrick, Jeff Brower, David Shaw, CPC, Bob Zahra, CPC." TF

CARETAKER COUPLE Mature, childless couple wanted for caretakers of country estate. Must have strong work ethic, with sense of personal pride in the job. Need good mechanical aptitude, house maintenance skills, and enjoy lawn and flower garden upkeep. Housekeeping and babysitting skills needed. House provided. Excellent benefit package. Salary commensurate with experience. Send resume to: LM Box 474. 2/90

LANDSCAPE DESIGN/SALES. LANDSCAPE MAINTENANCE: Leading Kansas City Landscape Company has immediate openings for talented, experienced, and aggressive persons in residential/light commercial design and sales, and in management of residential landscape maintenance. A.S. or B.S. in Horticulture or related fields preferred. Experience, organizational skills and a customer service attitude a plus. Competitive compensation and benefits package. Send a resume with experience and salary history to: HERMES COMPANY, INC., P.O. Box 14336, Lenexa, KS 66215. (913)888-2400. 1/90

HELP WANTED

LANDSCAPE SALES MANAGER

For landscape division of Westchester's premier tree care company. Unlimited potential. Excellent salary and share of profits. Minimum five years residential/commercial experience required.

GREENER LANDSCAPES

Address correspondence to:
Irving Eskenazi
Greener Landscapes
360 Adams Street
Bedford Hills, New York 10507

Irrigation Professionals Needed - Aggressive, fast growing irrigation company is seeking Installation Foreman, Service Technician, and Installers. Excellent wage and benefit package. Send resume to P.O. Box 25125, Lansing, MI 48909. 2/90

TREE & SHRUB CARE MANAGER,

Operations - Production Division, Major. Tree & Shrub Care Company (Spraying - Feeding only) seeks take charge person with horticulture management experience. Hands on experience in all aspects preferred, including ornamental spraying, truck and equipment maintenance, personnel management. This dynamic management position has potential to lead to Vice President. **Excellent salary and bonuses.** Position for New Jersey Branch. Confidential.

Contact: Sean Grace,
Executive Vice President
516-366-1818

LANDSCAPE MANAGER

GREEN THUMB ENTERPRISES, INC., a full service commercial landscape contractor based in the Washington DC area is looking to expand its Landscape Maintenance Division in 1990. We currently have openings for 2-3 qualified individuals to serve as area field managers. Individuals must have a minimum of 3-5 years supervisory experience in high quality commercial landscape maintenance. We offer an excellent salary complete with comprehensive benefit package and company vehicle. Send resume complete with salary requirements and references to:

Green Thumb Enterprises
2305 Old Ox Road, Suite #A
Sterling, Virginia 22170
Attention: Bill DeWitt

LANDSCAPE MAINTENANCE SUPERVISORS: Rapidly expanding landscape maintenance firm seeking experienced, quality individuals to be field/working supervisors. Tremendous opportunity to grow. Full benefits. Contact: Tandem Landscape Company, 33W480 Fabyan Parkway, West Chicago, Illinois 60185, Attn: Glenn Kedzie. TF

HELP WANTED: A well established Southern Vermont Landscaping Firm located in one of the East's most popular ski and vacation areas is looking for a highly skilled and experienced individual to oversee our commercial division. Responsibilities will include: Daily co-ordination of crews, basic landscape design and estimating. Good organization as well as strong personality are a must. We are a fast paced company looking to do the job right and we need quality people to make it happen. Please send resume to: Homestead Landscaping & Garden Center, LTD., P.O. Box 125, Bondville, VT 05340-0125. 2/90

KT ENTERPRISES, INC., a commercial landscape management firm servicing the Washington, DC Metropolitan market, is now accepting applications for employment in their landscape maintenance department for the 1990 season and beyond. All positions offer excellent salary, health benefits, retirement and, most importantly, an incomparable opportunity to work in a quality organization that will continue to offer professional satisfaction. Please send resume to: Mr. Doug Sevachko, KT Enterprises, Inc., 7950-1 Woodruff Court, Springfield, VA 22151 if your are interested in any of the following positions: Pruning Department Supervisor, Maintenance Department Supervisor, Maintenance Department Manager, Pruning Department Manager, Floral Installation Manager, Turf and Ornamental Plant Specialist. 1/90

LANDSCAPE MAINTENANCE SUPERVISOR/ TURF SPECIALIST: Opportunity to supervise turf program for landscape maintenance company in Northern Illinois. Strong background in all phases of turf management required. Horticultural degree and experience preferred. Excellent opportunity with young, aggressive company. Send resume and salary requirements to: Andrew Otting, Scott Byron & Co., Inc., 30088 N. Skokie Highway, Lake Bluff, Illinois 60044. 2/90

It's a Sure Bet The World's Top Courses Aren't Cutting with a National Mower Because It's Pretty!

Discover why National Triplexes are the 1st Choice of the world's top turf professionals. Call today for a FREE video.

(612) 646-4079

★ ★ ★

NATIONAL MOWER COMPANY

SINCE 1919

700 Raymond Avenue
St Paul, Minnesota 55114
FAX (612) 646-2887

Circle No. 137 on Reader Inquiry Card

LANDSCAPE INSTALLATION/DESIGN BUILD MANAGER: As a result of continued growth Ruppert Landscape Company is seeking a well qualified installation/design build manager. Background should include: sales, design, production management, estimating and strong administrative skills.
AREA MANAGER: We are seeking a talented well organized individual to fill a top management position. Must have strong horticulture and supervisory experience. Individual should have excellent customer relations skills as well. To learn more about these outstanding career opportunities with a fast growing and innovative team call or send resume to Ruppert Landscape Co., Inc., 17701 New Hampshire Ave., Ashton, MD 20861. Attn: Mr. Otero (301) 774-0400. 1/90

LANDSCAPE MAINTENANCE ASSISTANT MANAGER
GROUNDS MANAGEMENT DIVISION

Well-established New Jersey Company is seeking the right individual to manage a division of our company. You must be well-organized, sales minded and have a pleasant personality. Minimum two year horticultural degree coupled with at least 3 years of managerial experience required. If you have the drive and ambition to join a young, aggressive management team, send your resume in confidence to LM box 473.

EOE M/F

BRANCH/SALES MANAGERS; JUNIOR AND SENIOR LEVEL. Orkin Lawn Care offers more to our Managers, so why settle for less? Our company is a leader in its field and expansion dictates the need for senior level Branch and Sales Managers to maintain our high-standards and the integrity that has built the Orkin reputation. We offer unlimited room for advancement into top-level management, salary plus incentive bonus, and a comprehensive benefits package to talented, ambitious Orkin team members who are dedicated to success. You will report directly to Zone Managers and be required to: *Initiate and develop effective work atmosphere, *Meet financial objectives — revenue, cost control, profits and profit margins. *Enforce Orkin policies and procedures *Maintain a strong customer base *Select and train new employees. If you can fulfill these objectives and have the aptitude to prioritize duties and projects, send a confidential resume to: **ORKIN LAWN CARE, PAT GUY,** 2170 Piedmont Road, Northeast, Atlanta, GA 30324. 1/90

FOR SALE

FOR SALE: 1986 D-30 Princeton Piggy-Back Forklift with year old Kubota diesel engine - perfect condition. Seven Cities Sod, Inc., Davenport, Iowa. 319-391-1663. 1/90

Finn Hydroseeders, Mulch Spreaders, Krimpers, Pit Burners, Fiber Mulch & Tackifiers. New & Used. Wolbert & Master, Inc., P.O. Box 292, White Marsh, MD 21162, 301-335-9300. TF

GARDEN CENTER AND NURSERY FOR SALE: Includes building, equipment, and real estate. Steady growth pattern, excellent business reputation, retirement necessitating sale. Price: $191,500 (terms to qualified buyer). Contact Century 21 Prime Realty, 329 W. Washington St., Marquette, MI 49855. (906)228-5230. 1/90

Jacobsen - E10 - 7 units, rebuilt mowers. Excellent condition, $8,900.00. 3 gang Toro, good condition or will trade for Jac units for parts. $750.00. (501)664-2136 or (501)776-3802. 1/90

PIPE LOCATOR INEXPENSIVE! Locates, traces underground drain, water pipe lines of clay, PVC, ABS, steel, cement. Finds sprinklers, valves, clogs. Bloch Company, Box 18058, Cleveland, Ohio 44118. (216)371-0979. TF

DAKOTA HAND

TREE TRANSPLANTER

Lightweight, Variable Size Rootball (16" - 28"). Component Adaptable (sprayer, logsplitter, dump box, post-hole digger). Available in 3 models (towable, bucket mount, 3 pt.).

MID DAKOTA CORP.
Box 728 • Garrison, ND 58540
Phone (701) 337-5619 or 1-800-327-7154

16" reconditioned Brower Harvestor mounted on a 3600 Ford tractor. Asking $24,900. (205)665-2610. 1/90

1986 Vermeer Tree Spade: 84 inch - mounted on 1977 Mack truck, 10 Wheeler, 44 Rears, 5 Speed Low-ho Transmission, good tires. Excellent condition. Call (508)897-7244 (MA). 1/90

HYDRO-MULCHERS AND STRAW BLOWERS New and used. **JAMES LINCOLN CORPORATION,** 3220 S. Jupiter Rd., Garland, TX 75041. (214)840-2440, (800)527-2304. TF

LAWN MAINTENANCE BUSINESSES FOR SALE located in Flint and Detroit area. Both are well-established and include all equipment and client lists. Terms available to qualified purchaser. Contact Associated Business Group, Inc., 313-687-7650. Ray Harris. 2/90

ATTENTION GOLF SUPERINTENDENTS: Great Meyer Zoysia for your Fairways and Tees. Guaranteed Bermuda & fire ant free. Beauty Lawn Zoysia (Cincinnati) 1-513-424-2052. 1/90

FOR SALE: 1986 Howard Price Hydro 180. Rebuilt Hydraulic and Electrical Systems. Many new parts and new paint. Low hours. **MUST SELL.** Asking $11,000. (508)430-1533. 2/90

SPYDERS - New/Used Rebuilt. New Kohler engines, short blocks and a complete line of engines and Spyder replacement parts. New Style Nichols-Fairfield Torque Hub kits, heavy duty Wilton Caster Hub Kits, Remote Air Cleaner kits, heavy duty Carriage Side Plates. Call or Write: Mobile Lift Parts, Inc., 5402 Edgewood Rd., Crystal Lake, IL 60012. 815-455-7363; 1-800-397-7509. 1/90

LAWN SEED: Wholesale. Full line of top quality grasses. Improved bluegrass varieties, tall fescues and fine bladed ryegrasses. We specialize in custom mixing. Oliger Seed Company, 89 Hanna Parkway, Akron, OH 44319. Call collect (216)724-1266. TF

KELWAY® professional **SOIL ACIDITY** and **SOLUBLE SALTS TESTERS,** available from distributors nationwide. **HB-2** and **SST** brochures from **KEL INSTRUMENTS CO., INC.,** Dept. 1, P.O. Box 2174, Vineyard Haven, MA 02568. (508)693-7798. 11/90

PORTABLE STUMP CUTTER - 14 or 16 H.P. Mag Kohler, 4 speed transaxle - 34 1/2" wide. Kinetic Stump Cutter, Inc. 1-800-422-9344. 2/90

Bank Liquidation Sale: By Order of Secured Parties; Saturday, February 3, 1990, Grand Rapids, Michigan. 9 AM - 2 PM. Featuring: Wls Crg Trls; Auto Cntrls; Sgl/Mlti wr; PVC/Ply pipe; Plw Blades; Tool Boxes; Pipe Racks; Cust Lists; Fire Exting; Burk Vb Plws; Sprink Heads; Hilti Drills; PVC/Ply ftgs; Weld Unit; Hand Tools; Computer; Nozzles; Bkflw Prev; Vrmer Plws; Elect Vlvs; Shov/tamps; Boring Rds; Air Cmpres; Draft Tbls; Off Furn; Stp Lddrs; Vlv Boxes. For a list of sale items and price send requisition via fax to Bank Liquidation, (616)531-2990. 1/90

CHEMICAL LAWN CARE FIRM FOR SALE: 6 year business. Excellent 2 to 3-man operation. No effective competition. Call 409-569-0591 or write P.O. Box 632713, Nacogdoches, TX 75961. 2/89

ZOYSIA MEYERS Z-52 SOD OR SPRIGS. EXCELLENT QUALITY DELIVERED ANYWHERE AT REASONABLE PRICES. ALSO ROW PLANTING AVAILABLE. DOUBLE SPRINGS GRASS FARM, SEARCY, AR. 1-800-458-4756. TF

For Sale: New and Used Brouwer - Mowers - VACX - Fork Lifts - Harvesters - and full line of replacement parts. Contact Glenn or Ed Markham at 1-800-458-3644. 1/90

REINCO HYDROGRASSERS and power mulchers in stock. Opdyke Inc. (Philadelphia Area) 215-721-4444. TF

PAUL FLORENCE Turfgrass: Quality seed for the Turf Professional. Elite Bluegrasses, Fine-Leaf Ryegrasses, and Turf-Type Tall Fescues. Custom mixing our specialty. Silva-Fiber mulch and supplies for hydro-seeders. Quality Elite Bluegrass Sod. Call us! (513)642-7487. 13600 Watkins Rd., Marysville, OH 43040. TF

USED EQUIPMENT

NEW and USED EQUIPMENT--Asplundh, Hi Ranger and Lift-all forestry bucket trucks, Chipmore wood chippers. Mirk, Inc., (216)669-3567, (216)669-3562, 7629 Chippewa Road, Orrville, Ohio 44667. TF

BUCKET TRUCKS, Straight Stick, Corner Mount and Knuckle Boom Cranes. Brush Chippers - New Morbark Disc Type, New Woodchuck Drum Type. Best prices anywhere. Used Chippers - Asplundh, Woodchuck, etc. 2 to 8 usually in stock. Sprayers, Dumps, Stakes, Log Loaders, Crew Cab Chip Box Dumps, Railroad Trucks, 50 in stock. Sold as is or reconditioned. Opdyke's, Hatfield (Philadelphia Area) 215-721-4444. TF

Now Sevin® gives you two ways to control tough turf pests.
Now SEVIN® brand carbaryl insecticide is available in an easy-to-handle granular formulation. So you have two ways to apply the effective, economical and environmentally sound control of SEVIN® brand carbaryl on your toughest turf pests.
One thing's for sure, whether you choose the liquid or new granular formulation, you get the same broad-spectrum pest control that has made SEVIN® brand carbaryl insecticide the first choice of turfcare specialists across the country.
Tests prove that SEVIN® brand carbaryl insecticide delivers effective control of white grubs, sod webworms, chinch bugs, bluegrass billbugs, cutworms and more than two dozen other turf pests. Plus, the liquid formulation can be used to control 86 troublesome insects on trees and ornamentals.
And, because other formulations of SEVIN® brand carbaryl insecticide are used to control pests on poultry, pets and even some species of game birds, it's one of the most environmentally sound pesticides you can use.
Contact your turfcare chemicals distributor today, and put the proven performance of SEVIN® brand carbaryl insecticide to work for you. Now available in a quality granular formulation.
Sevin®
Brand Carbaryl Insecticide
RHÔNE-POULENC
As with all crop protection chemicals, always read and follow instructions on the label.
SEVIN is the registered trademark of Rhone-Poulenc for carbaryl insecticide. © 1990 Rhone-Poulenc Ag Company

Circle No. 275 on Reader Inquiry Card

Used Equipment: 1988 Finn B70 Hay Mulcher, Trailer Mounted. 35 h.p. Wisconsin. 130 Hrs. New Condition $9,000.00 Finn 1,500 Gallon Hydro Seeder, Ford Industrial Motor. Mounted on 1980 F600. Well Maintained. $15,500. (207)265-2430. 1/90

BUCKET TRUCK: Hi Ranger 65', 57', 50'. Skyworkers with chip boxes. Asplundh bucket trucks with chip boxes. Asplundh brush chippers. Bean 55 gal. sprayers. Pete Mainka Enterprises, 633 Cecilia Drive, Pewaukee, WI 53072. 414-691-4306. TF

---

60 inch Rockhund for New Holland skid steer. Under 60 hours on machine. Like new. $3,800. (708)859-0200. Aurora, Illinois. 1/90

WANTED

WANTED TO PURCHASE
Tree Spraying Company in New Jersey. Any size. Will pay all cash. Confidential.
Sean Grace, Vice President.
516-366-1818.

WANTED: Jacobson blitzer or fairways or Toros - 5, 7, or 9 gang. Any condition - priced accordingly. (313)653-5695. 1/90

MISCELLANEOUS

FREE PARTS CATALOG-- If you own a 36"--48"--52" walk behind mower and you feel you're paying too much for parts, call Preco Distributors toll-free and request our parts catalog. **BELTS, BLADES, GRASS CATCHERS, WHEELS AND LOTS MORE!** Replacement parts that fit: **BOBCAT, BUNTON, KEES, EXMARK & OTHERS.** 1 day shipping coast to coast available. All parts carry a 90-day warranty. Don't wait, call 24 hours a day. **TOLL-FREE 1-800-428-8004, in Mass. 413-596-5505. PRECO DISTRIBUTORS, 97 Center St., Ludlow, MA 01056.** TF

LANDSCAPE TRAINING VIDEOS
Intermediate mower maintenance field and shop repair; efficient/profitable mowing techniques; professional shrub trimming, plant installation, basic landscape plan drawing, etc. **ENGLISH AND SPANISH.** Write for free brochure.

C.D. Anderson Landscape Videos
515 Ogden Avenue
Downers Grove, IL 60515
1-800-937-0399

SERVICES

Golf Course Sprinkler Head Reconditioning. Rainbird, Toro, etc. Reconditioning accomplished in our 14,000 sq. ft. facility. We buy usable cores. Call, mail or fax (602)253-1701. Golf Course Specialists, 1440 S. 23rd Ave., Phoenix, AZ 85009. Ph. (602)253-8120. 1/90

ADVERTISER INDEX

NO.	ADVERTISER	PAGE NO.
101	ATI Corp.	32
165	Aquatrols Corp. of America	36
102	Barebo, Inc.	105
103	Bunton Co.	19
104	Ciba Geigy Corp.	2-3
105	Cushman	13
106	Cushman	93
297	Cushman	49
108	Deere and Co., John	6-7
109	Ditch Witch	57
116	Elanco Products Co./ Balon	43
110	Elanco Products Co./ Cutless	14-15
115	Elanco Products Co./ Gallery	38-39
112	Elanco Products Co./ Reemay	52-53
111	Elanco Products Co./ Surflan (Regional)	115
114	Elanco Products Co./ Surflan	CV3
113	Elanco Products Co./ Team	65
117	Excel Industries, Inc.	37
118	Finn Equipment	104
119	Fuerst Brothers,	12
120	GCSAA	109
121	Goossen Industries	96
122	Grasshopper Co.	64
221	Gravely International, Inc.	91
220	Howard Price Turf Equipment	67
125	ICI Americas, Inc.	69
126	International Seeds, Inc.	29
127	Jacobsen Div. of Textron	33
128	KLM Bio-Systems, Inc.	28
129	Lebanon Chemical Corp.	18
166	Lebanon Chemical Corp.	26
130	Lesco, Inc.	61
131	Lofts Seeds, Inc.	CV4
133	Maruyama Mfg. Co., Inc.	89
132	Mazda Motors of America	63
134	Miller Electric Mfg., Inc.	97
135	Mitsubishi Motor Sales of America, Inc.	23
136	Mobay Corp.	44-45
137	National Mower Co.	111
138	Nor Am Chemical Co.	73
139	Northrup King Co.	81
140	Olathe Manufacturing, Inc.	100
261	Onan Corp.	27
141	Oregon Fine Fescue Commission	85
142	PBI Gordon Corp.	30-31
143	Pickseed West, Inc.	20-21
144	Ransomes, Inc.	77
145	Reemay Inc.	95
275	Rhone Poulenc Ag Co./ Sevin	113
146	Rhone Poulenc Ag Co./ Ronstar	47
147	Rhone Poulenc Ag Co./ Chipco	24-25
148	Ringer Corp.	41
149	Sandoz Crop Protection Corp.	87
153	Scag Power quipment	83
150	Scott Proturf, O.M.	58-59
151	Seed Research of Oregon, Inc.	75
154	Shindiawa	79
292	Simplicity Manufacturing, Inc.	71
155	Spraying Systems, Inc.	55
291	Stanford Seed Co.	16-17
157	Tee 2 Green Corp.	CV2
158	Toro Co.	101
161	Toyota Motor Sales, USA, Inc. (Reg.)	99
162	Turf Merchants	51
214	Turf Seed, Inc.	5
160	Turfco Manufacturing, Inc.	72
163	Walker Manufacturing Co.	22
164	Well Cargo, Inc.	98

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

WE REACH THE PEOPLE YOU NEED TO REACH!

Place a classified ad in any of these EDGELL COMMUNICATIONS' publications and you know your ad dollar is wisely spent.

Circulation	Magazine
22,544	AFTERMARKET BUSINESS
13,094	AMERICAN AUTOMATIC MERCHANDISER
135,288	AMERICAN SALON
28,987	BEVERAGE INDUSTRY
10,478	BODY FASHIONS/INTIMATE APPAREL
3,894	CANDY INDUSTRY
11,293	CANDY MARKETER
50,125	COMMUNICATIONS NEWS
20,431	CONCRETE PRODUCER NEWS
102,981	DENTAL MANAGEMENT
6,765	DERMATOLOGY TIMES
12,781	DRUG & COSMETIC INDUSTRY
35,417	DVM NEWSMAGAZINE
24,447	FLOORING
77,322	FOOD & DRUG PACKAGING
61,224	FOOD MANAGEMENT
19,063	HEARING INSTRUMENTS
45,116	HOTEL & MOTEL MANAGEMENT

Circulation	Magazine
14,090	HOUSEWARES
275,174	INSTRUCTOR
47,767	LANDSCAPE MANAGEMENT
13,550	LAWN CARE INDUSTRY
15,241	LP/GAS
17,407	MEAT PROCESSING
13,613	NEUROLOGY
15,321	OPHTHALMOLOGY TIMES
13,774	PAPERBOARD PACKAGING
12,923	PAPER SALES
16,325	PEST CONTROL
14,099	PETS SUPPLIES MARKETING
21,581	PIT & QUARRY
10,090	POULTRY PROCESSING
101,583	RESTAURANT MANAGEMENT
20,987	ROOFING/SIDING/INSULATION
9,377	SNACK FOOD
8,957	UROLOGY TIMES

Don't forget that classified advertising works just as effectively in locating employees as it does if you are looking for a position, have a line, machinery or a business to sell, are seeking representatives or wish to buy a specific item. Let it go to work for you!

EDGELL COMMUNICATIONS does a better job of reaching those who count (*your potential customers*) than any other business publisher.

COUNT ON US TO REACH THOSE WHO COUNT!

Call Dawn Nilsen at 218-723-9200

EDGELL COMMUNICATIONS
One East First Street
Duluth, Minnesota 55802

PROBLEM MANAGEMENT

by **Balakrishna Rao,** Ph.D.

Where to find deficient elements

Problem: *What is the best source of minor (trace) elements for one-shot spray programs? (Florida)*

Solution: It is not clear whether you are dealing with turfgrass and/or ornamental plants. Whatever the crop, we need to know what minor elements are deficient. A soil and/or foliar analysis will help determine this. With this information it's easy to make nutrient recommendations.

Your idea of a "one-shot" spray program sounds interesting. However, the "one-shot" treatment may not work well in many situations since the treatment will not have enough specific deficient elements. Although a few products on the market contain several minor elements, I am not familiar with any one product that will be practical to use in your "one-shot" spray program.

With additional background information about crops and nutrient history, a further recommendation can be made. Therefore, first determine the deficient minor element (if any) and then follow the recommendations for correcting it.

Brown patches in centipede sod

Problem: *What should you do first about brown patches in centipede sod? We put in new sod last summer and the spots are coming back in the same area. (South Carolina)*

Solution: The brown spots may be related to abiotic disorders or to how well the sod was transplanted and watered during establishment.

Proper transplanting involves staggering the sod pieces in a checkerboard pattern on a well prepared soil bed. The ends of each sod piece should be joined without overlapping. It is important not to stretch the sod during transplanting since it can shrink when drying takes place.

After placing the sod, the area should be tamped or rolled to remove any air pockets, which can result in drying of plant parts, contribute to "brown or dead spots" and can cause a delay in sod rooting.

The fact that the spots occured in the same location as before could indicate the presence of local dry spots in the soil. Test to determine if the brown areas absorb and retain moisture properly. If not, wetting agents and/or aerification may alleviate the problem.

Also consider the possibility of some diseases such as anthracnose and/or fusarium blight. If there is evidence of disease activity, provide for their management.

After the sod has been installed properly, it should be watered and kept moist until it establishes very well. Generally, deep irrigation to a 6- to 8-inch soil depth needs to be accomplished soon after the sodding is completed. Ideally, a low rate over an extended period of time should be good.

After this, the sodded area should be irrigated lightly every day to maintain sufficient moisture levels in the sod.

Now that the reasons for brown spots in sodded areas have been explained, you should be able to minimize or treat for this type of problem. For existing problems, keep the area well-watered and provide good turfgrass management. Often stressed and weakened plants are susceptible to insect and disease problems. Therefore, provide pest management as needed.

Nitrogen rates for bluegrass

Problem: *Is 1½ pounds of nitrogen per 1,000 sq. ft. per application excessive on bluegrass turf for a spring treatment on sandy soils? (Michigan)*

Solution: Yes, particularly if you're using a quick-release source. However, 1½ pounds of nitrogen from a controlled-release fertilizer may not be excessive, depending on the solubility or release characteristics of the fertilizer.

Richard Rathjens, senior agronomist at Davey, says, "Regardless of soil type, a rate of 1.5 lbs. applied in the spring is a high rate, particularly if a quick-release source is used. Applications made at that time promote leaf growth at the expense of root growth and deplete carbohydrate reserves."

Because of the potential for nitrogen leaching and groundwater contamination, the standard recommendation for sandy soils would be to use controlled-release fertilizers or applications at low rates of quick-release fertilizers.

The emphasis should be placed on fertilizing in the fall or late fall to promote root growth, carbohydrate reserves and quick green-up in the spring.

Readers respond with solutions

In the August 1989 issue of LANDSCAPE MANAGEMENT, we answered the following question: "I recently heard that there is a serious blight on hemlock in the Connecticut area brought about by Hurricane Gloria. Is this possible?

Concerning this question, one reader responded from Columbus, Ohio, and two from the Long Island area. Everyone suggested the possibility that the questionable "hemlock blight" is the spread of the woolly adelgid. I thank all of them for taking time to respond to the question. **LM**

Balakrishna Rao is Manager of Technical Resources for the Davey Tree Co., Kent, Ohio.

Questions should be mailed to Problem Management, LANDSCAPE MANAGEMENT, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2-3 months for an answer to appear in the magazine.

"I was hesitant to try it at first. I thought, surely, there would be some injury to my flowers. But Surflan convinced me otherwise. It didn't harm them at all when we sprayed directly over the top.

"Surflan wasn't so gentle to the weeds. We used to have a real problem with crabgrass. We'd have to go in and pull them all by hand. It was so time-consuming. I figured I was paying close to $50 for each thousand square feet just for labor.

"But with Surflan, the job took only minutes. And cost me less than $3.00 for what used to cost me almost $50.

"Surflan also took care of our oxalis and chickweed. And many other problem weeds, too. For almost eight months."

Prove Surflan for yourself. See your Elanco distributor and ask for a free Surflan brochure. Or call toll-free: **1-800-352-6776.**

Elanco Products Company
A Division of Eli Lilly and Company
Lilly Corporate Center
Dept. EM-455, Indianapolis, IN 46285, U.S.A.
Surflan®—(oryzalin, Elanco)

Circle No. 114 on Reader Inquiry Card

"Are you kidding? Spray herbicide over the top of my flowers?

Surflan® proved I could."

Cynthia Harper
Color Burst, Atlanta, Ga.

Ritz-Carlton, Buckhead
Atlanta, Georgia

Get the benefits of Wildflowers and the experience of Lofts

Marie Pompei

Wildflowers! They're a beautiful, low-maintenance alternative to mown turf. And no one can help you choose wildflowers better than Marie Pompei at Lofts.

As a wildflower specialist, Marie will consider your geographical area, the soil moisture, height of growth and time of flowering. She'll even consider colors. Then she'll recommend the specific mix to provide the best results.

If soil erosion or weed invasion are problems in your area, Marie can suggest the best companion grass. She'll also suggest how to properly manage the field for optimum floral display in the years to come.

Wildflowers need very little care. So they're perfect for roadsides, parks, golf courses, estates or industrial sites. They're ideal for areas that are hard to mow. Or any place that needs color. Try low-maintenance, natural wildflowers as your colorful alternative to high-maintenance turf. And get your wildflowers from Lofts.

Lofts has been a leader in the seed business since 1923. In fact, Lofts introduced Pinto as one of the first commercial wildflower mixtures.

Call Marie at Lofts today. She'll help you select the wildflower mix suited to your needs.

LOFTS

Lofts Seed Inc.
World's largest marketer of turfgrass seed
Bound Brook, NJ 08805
(800) 526-3890 • (800) 624-1474 (NJ)

Circle No. 131 on Reader Inquiry Card